



11283-013001.ST25.txt
SEQUENCE LISTING

<110> Kuramitsu, Seiki
Yokoyama, Shigeyuki

<120> Novel DNA Repair Enzymes, Nucleic Acids Encoding DNA Repair
Enzymes And Methods of Using Them

<130> 11283-013001/PH1261 US

<140> US 09/938,901

<141> 2001-08-24

<150> JP 47762/2001

<151> 2001-02-23

<160> 65

<170> PatentIn version 3.3

<210> 1

<211> 975

<212> DNA

<213> Thermus thermophilus

<220>

<221> CDS

<222> (1)..(975)

<400> 1

atg	gag	gcc	tgg	cgg	aaa	gcc	ctc	ctc	gcc	tgg	tac	cgg	gaa	aac	gcc	48
Met	Glu	Ala	Trp	Arg	Lys	Ala	Leu	Leu	Ala	Trp	Tyr	Arg	Glu	Asn	Ala	
1				5					10					15		
cgc	ccc	ctc	ccc	tgg	cgg	ggg	gag	aag	gac	cct	tac	cgc	gtc	ctg	gtc	96
Arg	Pro	Leu	Pro	Trp	Arg	Gly	Glu	Lys	Asp	Pro	Tyr	Arg	Val	Leu	Val	
			20					25					30			
tcc	gag	gtc	ctt	ctg	cag	cag	acc	cgg	gtg	gag	cag	gcc	ctc	ccc	tat	144
Ser	Glu	Val	Leu	Leu	Gln	Gln	Thr	Arg	Val	Glu	Gln	Ala	Leu	Pro	Tyr	
		35					40					45				
tac	cgc	cgc	ttt	ctg	gag	cgc	ttt	ccc	acc	ctg	aag	gcc	ctg	gcc	gcg	192
Tyr	Arg	Arg	Phe	Leu	Glu	Arg	Phe	Pro	Thr	Leu	Lys	Ala	Leu	Ala	Ala	
	50					55				60						
gct	tcc	ctg	gaa	gag	gtc	ctt	agg	gtc	tgg	cag	ggg	gcg	ggc	tac	tac	240
Ala	Ser	Leu	Glu	Glu	Val	Leu	Arg	Val	Trp	Gln	Gly	Ala	Gly	Tyr	Tyr	
65					70				75					80		
cgg	cgg	gcg	gaa	cac	ctc	cac	cgc	ctg	gcc	cga	agc	gtg	gag	gag	ctt	288
Arg	Arg	Ala	Glu	His	Leu	His	Arg	Leu	Ala	Arg	Ser	Val	Glu	Glu	Leu	
				85					90					95		
ccc	ccg	agc	ttc	gcc	gag	ctt	cgg	ggg	ctt	cct	ggt	ctc	ggg	cct	tac	336
Pro	Pro	Ser	Phe	Ala	Glu	Leu	Arg	Gly	Leu	Pro	Gly	Leu	Gly	Pro	Tyr	
			100					105					110			
acc	gcg	gcg	gcg	gtg	gcc	tcc	atc	gcc	ttc	ggg	gag	cgg	gtg	gcg	gcg	384
Thr	Ala	Ala	Ala	Val	Ala	Ser	Ile	Ala	Phe	Gly	Glu	Arg	Val	Ala	Ala	
		115					120					125				

11283-013001.ST25.txt

gtg gac ggg aac gtc cgg agg gtc ctc tcc cgc ctc ttc gcc cgg gaa Val Asp Gly Asn Val Arg Arg Val Leu Ser Arg Leu Phe Ala Arg Glu 130 135 140	432
agc ccc aag gag aag gag ctt ttc gcc ctc gcc cag ggc ctc ctc ccc Ser Pro Lys Glu Lys Glu Leu Phe Ala Leu Ala Gln Gly Leu Leu Pro 145 150 155 160	480
gag ggc gtg gac ccg ggg gtg tgg aac cag gcc ctc atg gag ctc ggg Glu Gly Val Asp Pro Gly Val Trp Asn Gln Ala Leu Met Glu Leu Gly 165 170 175	528
gcc acg gtc tgc ctg ccg aaa cgg ccc cgt tgc ggg gcc tgc ccc cta Ala Thr Val Cys Leu Pro Lys Arg Pro Arg Cys Gly Ala Cys Pro Leu 180 185 190	576
ggg gcc ttc tgc cgg ggg aag gag gcc ccc ggg cgc tac ccc gcg ccc Gly Ala Phe Cys Arg Gly Lys Glu Ala Pro Gly Arg Tyr Pro Ala Pro 195 200 205	624
agg aag cgc cgg gcg aag gag gag cgc ctc gtc gcc ctc gtc ctc ctc Arg Lys Arg Arg Ala Lys Glu Glu Arg Leu Val Ala Leu Val Leu Leu 210 215 220	672
ggg cgg aag ggg gtg cac ctg gaa agg ctt gag ggg cgc ttc cag ggc Gly Arg Lys Gly Val His Leu Glu Arg Leu Glu Gly Arg Phe Gln Gly 225 230 235 240	720
ctc tac ggc gtc ccc ctc ttt ccc cct gag gag ctt ccc ggg cgg gag Leu Tyr Gly Val Pro Leu Phe Pro Pro Glu Glu Leu Pro Gly Arg Glu 245 250 255	768
gcg gcc ttc ggg gtg agg tct agg ccc cta ggc gag gtg cgc cac gcc Ala Ala Phe Gly Val Arg Ser Arg Pro Leu Gly Glu Val Arg His Ala 260 265 270	816
ctc acc cac cgg agg ctt cgc gtg gag gtg cgg ggg gcc ctt tgg gaa Leu Thr His Arg Arg Leu Arg Val Glu Val Arg Gly Ala Leu Trp Glu 275 280 285	864
ggg gag ggg gag gac ccc tgg aag agg ccc cta ccc aag ctc atg gag Gly Glu Gly Glu Asp Pro Trp Lys Arg Pro Leu Pro Lys Leu Met Glu 290 295 300	912
aag gtg ctc cgc aag gcg ctt ccc ctc ctc gct cat gcg ggc gta gtc Lys Val Leu Arg Lys Ala Leu Pro Leu Leu Ala His Ala Gly Val Val 305 310 315 320	960
ccc ctc ccg gac gca Pro Leu Pro Asp Ala 325	975

<210> 2
 <211> 325
 <212> PRT
 <213> Thermus thermophilus

<400> 2

Met Glu Ala Trp Arg Lys Ala Leu Leu Ala Trp Tyr Arg Glu Asn Ala 1 5 10 15
--

11283-013001.ST25.txt

Arg Pro Leu Pro Trp Arg Gly Glu Lys Asp Pro Tyr Arg Val Leu Val
20 25 30

Ser Glu Val Leu Leu Gln Gln Thr Arg Val Glu Gln Ala Leu Pro Tyr
35 40 45

Tyr Arg Arg Phe Leu Glu Arg Phe Pro Thr Leu Lys Ala Leu Ala Ala
50 55 60

Ala Ser Leu Glu Glu Val Leu Arg Val Trp Gln Gly Ala Gly Tyr Tyr
65 70 75 80

Arg Arg Ala Glu His Leu His Arg Leu Ala Arg Ser Val Glu Glu Leu
85 90 95

Pro Pro Ser Phe Ala Glu Leu Arg Gly Leu Pro Gly Leu Gly Pro Tyr
100 105 110

Thr Ala Ala Ala Val Ala Ser Ile Ala Phe Gly Glu Arg Val Ala Ala
115 120 125

Val Asp Gly Asn Val Arg Arg Val Leu Ser Arg Leu Phe Ala Arg Glu
130 135 140

Ser Pro Lys Glu Lys Glu Leu Phe Ala Leu Ala Gln Gly Leu Leu Pro
145 150 155 160

Glu Gly Val Asp Pro Gly Val Trp Asn Gln Ala Leu Met Glu Leu Gly
165 170 175

Ala Thr Val Cys Leu Pro Lys Arg Pro Arg Cys Gly Ala Cys Pro Leu
180 185 190

Gly Ala Phe Cys Arg Gly Lys Glu Ala Pro Gly Arg Tyr Pro Ala Pro
195 200 205

Arg Lys Arg Arg Ala Lys Glu Glu Arg Leu Val Ala Leu Val Leu Leu
210 215 220

Gly Arg Lys Gly Val His Leu Glu Arg Leu Glu Gly Arg Phe Gln Gly
225 230 235 240

Leu Tyr Gly Val Pro Leu Phe Pro Pro Glu Glu Leu Pro Gly Arg Glu
245 250 255

Ala Ala Phe Gly Val Arg Ser Arg Pro Leu Gly Glu Val Arg His Ala
260 265 270

Leu Thr His Arg Arg Leu Arg Val Glu Val Arg Gly Ala Leu Trp Glu
 275 280 285

Gly Glu Gly Glu Asp Pro Trp Lys Arg Pro Leu Pro Lys Leu Met Glu
 290 295 300

Lys Val Leu Arg Lys Ala Leu Pro Leu Leu Ala His Ala Gly Val Val
 305 310 315 320

Pro Leu Pro Asp Ala
 325

<210> 3
 <211> 1998
 <212> DNA
 <213> Thermus thermophilus

<220>
 <221> CDS
 <222> (1)..(1998)

<400> 3
 atg agg gac cgg gtc cgc tgg cgg gtg ctt tcc ctc cct ccc ctc gcc 48
 Met Arg Asp Arg Val Arg Trp Arg Val Leu Ser Leu Pro Pro Leu Ala
 1 5 10 15
 cag tgg cgg gag gtg atg gcg gcc ttg gag gtg ggg ccg gag gcc gcc 96
 Gln Trp Arg Glu Val Met Ala Ala Leu Glu Val Gly Pro Glu Ala Ala
 20 25 30
 ctg gcc tac tgg cac cgg ggc ttt agg cgc aag gag gac ctg gac ccc 144
 Leu Ala Tyr Trp His Arg Gly Phe Arg Arg Lys Glu Asp Leu Asp Pro
 35 40 45
 ccc ctc gcc ctc ctt ccc ctc aag ggc ctg agg gag gcg gcg gcc ctc 192
 Pro Leu Ala Leu Leu Pro Leu Lys Gly Leu Arg Glu Ala Ala Ala Leu
 50 55 60
 ctg gag gag gcg ctc cgc cag ggg aag cgg atc cgc gtc cac ggg gac 240
 Leu Glu Glu Ala Leu Arg Gln Gly Lys Arg Ile Arg Val His Gly Asp
 65 70 75 80
 tac gac gcc gac ggg ctc acg ggc acg gcc atc ctg gtt cgg ggc ctc 288
 Tyr Asp Ala Asp Gly Leu Thr Gly Thr Ala Ile Leu Val Arg Gly Leu
 85 90 95
 gcc gcc ttg ggc gcc gac gtc cac ccc ttc atc ccc cac cgg ctg gag 336
 Ala Ala Leu Gly Ala Asp Val His Pro Phe Ile Pro His Arg Leu Glu
 100 105 110
 gaa ggg tac ggg gtg ctg atg gag cgg gtt ccc gag cac ctc gag gcc 384
 Glu Gly Tyr Gly Val Leu Met Glu Arg Val Pro Glu His Leu Glu Ala
 115 120 125
 tcg gac ctc ttc ctc acc gtg gac tgc ggg atc acg aac cac gcc gag 432
 Ser Asp Leu Phe Leu Thr Val Asp Cys Gly Ile Thr Asn His Ala Glu
 Page 4

130	ctc Leu 145	agg Arg	gag Glu	ctt Leu	ttg Leu	gaa Glu 150	aac Asn	ggg Gly	gtg Val	gag Glu	gtg Val 155	atc Ile	gtc Val	acc Thr	gac Asp	cac His 160	480
	cac His	acc Thr	ccc Pro	ggc Gly	aag Lys 165	acc Thr	cct Pro	tcc Ser	ccc Pro	ggc Gly 170	ctc Leu	gtg Val	gtc Val	cac His	ccc Pro 175	gcc Ala	528
	ctc Leu	acc Thr	ccg Pro	gac Asp 180	ctt Leu	aag Lys	gag Glu	aag Lys	ccc Pro 185	acg Thr	ggg Gly	gcg Ala	ggg Gly	gtg Val 190	gtc Val	ttc Phe	576
	ctc Leu	ctc Leu	ctc Leu 195	tgg Trp	gcc Ala	ctc Leu	cac His	gag Glu 200	cgc Arg	ctg Leu	ggc Gly	ctt Leu	ccc Pro 205	cca Pro	ccc Pro	ctg Leu	624
	gag Glu	tac Tyr 210	gcc Ala	gac Asp	ctc Leu	gcc Ala	gcg Ala 215	gtg Val	ggc Gly	acc Thr	atc Ile	gcc Ala 220	gac Asp	gtg Val	gcc Ala	ccc Pro	672
	ctt Leu 225	tgg Trp	ggc Gly	tgg Trp	aac Asn	cgg Arg 230	gcc Ala	ttg Leu	gtg Val	aag Lys	gag Glu 235	ggc Gly	ctg Leu	gcc Ala	cgc Arg	atc Ile 240	720
	ccc Pro	gcc Ala	tcc Ser	tcc Ser	tgg Trp 245	gtt Val	ggg Gly	ctc Leu	agg Arg	ctt Leu 250	ctg Leu	gcc Ala	gag Glu	gcg Ala	gtg Val 255	ggg Gly	768
	tac Tyr	acg Thr	ggg Gly	aag Lys 260	gcg Ala	gtg Val	gag Glu	gtg Val	gcc Ala 265	ttc Phe	cgc Arg	atc Ile	gcc Ala	ccc Pro 270	cgg Arg	atc Ile	816
	aac Asn	gcg Ala	gca Ala 275	agc Ser	cgc Arg	ctc Leu	ggg Gly	gag Glu 280	gct Ala	gag Glu	aag Lys	gcc Ala	cta Leu 285	agg Arg	ctc Leu	ctc Leu	864
	ctc Leu	acc Thr 290	gac Asp	gac Asp	gcg Ala	gcc Ala	gag Glu 295	gcc Ala	cag Gln	gcc Ala	ctc Leu	gtg Val 300	ggg Gly	gaa Glu	ctc Leu	cac His	912
	cgg Arg 305	ctg Leu	aac Asn	gcc Ala	cgc Arg	cgc Arg 310	cag Gln	acc Thr	ctg Leu	gag Glu	gag Glu 315	gcc Ala	atg Met	ctc Leu	agg Arg	aag Lys 320	960
	ctc Leu	ctc Leu	ccc Pro	cag Gln 325	gcg Ala	gac Asp	ccc Pro	gag Glu	gcc Ala	aag Lys 330	gcc Ala	atc Ile	gtc Val	ctc Leu	ctg Leu 335	gac Asp	1008
	ccc Pro	gag Glu	ggg Gly	cac His 340	ccg Pro	ggg Gly	gtg Val	atg Met	ggc Gly 345	atc Ile	gtg Val	gcg Ala	agc Ser	cgc Arg 350	atc Ile	ctg Leu	1056
	gag Glu	gcc Ala	acc Thr 355	ctc Leu	cgg Arg	ccc Pro	gtc Val	ttc Phe 360	ctg Leu	gtg Val	gcc Ala	cag Gln	ggc Gly 365	aag Lys	ggg Gly	acg Thr	1104
	gtg Val 370	cgg Arg	agc Ser	ctc Leu	gcc Ala	ccc Pro	atc Ile 375	agc Ser	gcc Ala	gtg Val	gag Glu	gcc Ala 380	cta Leu	agg Arg	agc Ser	gcc Ala	1152
	gag Glu	gac Asp	ctt Leu	ttg Leu	ttg Leu	cgc Arg	tac Asn	ggg Gly	ggg Gly	cac His	aag Lys	gag Glu	gcg Ala	gcg Ala	ggc Gly	ttc Phe	1200

11283-013001.ST25.txt

Glu 385	Asp	Leu	Leu	Leu	Arg 390	Tyr	Gly	Gly	His	Lys 395	Glu	Ala	Ala	Gly	Phe 400	
gcc Ala	atg Met	gac Asp	gag Glu	gcc Ala 405	ctc Leu	ttc Phe	ccc Pro	gcc Ala	ttc Phe 410	aag Lys	gcc Ala	cgg Arg	gtg Val	gag Glu 415	gcc Ala	1248
tac Tyr	gcc Ala	gcc Ala	cgc Arg 420	ttc Phe	ccc Pro	gac Asp	ccc Pro	gtg Val 425	cgc Arg	gag Glu	gtg Val	gcc Ala	ctt Leu 430	ttg Leu	gac Asp	1296
ctg Leu	ctt Leu	ccg Pro 435	gag Glu	ccc Pro	ggc Gly	ctc Leu	ctc Leu 440	ccc Pro	cag Gln	gtc Val	ttc Phe	cgg Arg 445	gag Glu	ctc Leu	gcc Ala	1344
ctt Leu 450	ttg Leu	gag Glu	ccc Pro	tac Tyr	ggc Gly	gag Glu 455	gga Gly	aac Asn	ccc Pro	gag Glu	ccc Pro 460	ctc Leu	ttc Phe	ctc Leu	ctc Leu	1392
ttc Phe 465	ggc Gly	gcc Ala	ccg Pro	gag Glu	gag Glu 470	gcc Ala	cgg Arg	cgc Arg	ctc Leu	ggg Gly 475	gag Glu	ggc Gly	cgc Arg	cac His	ctc Leu 480	1440
gcc Ala	ttc Phe	cgc Arg	ctg Leu	aag Lys 485	ggg Gly	gtg Val	cgg Arg	gtc Val	ctg Leu 490	gcc Ala	tgg Trp	aaa Lys	cag Gln	ggg Gly 495	gac Asp	1488
ctc Leu	gcc Ala	ctg Leu	ccc Pro 500	ccg Pro	gag Glu	gtg Val	gag Glu	gtg Val 505	gcg Ala	ggc Gly	ctc Leu	ctc Leu	agc Ser 510	gaa Glu	aac Asn	1536
gcc Ala	tgg Trp	aac Asn 515	ggc Gly	cac His	ctc Leu	gcc Ala	tac Tyr 520	gag Glu	gtc Val	cag Gln	gcg Ala	gtg Val 525	gac Asp	ctg Leu	cga Arg	1584
aag Lys	cca Pro 530	gag Glu	gcg Ala	ctg Leu	gag Glu	ggc Gly 535	ggg Gly	atc Ile	gcg Ala	ccc Pro	ttc Phe 540	gcc Ala	tac Tyr	ccc Pro	ctg Leu	1632
ccc Pro 545	ctc Leu	ctc Leu	gag Glu	gcc Ala	ctg Leu 550	gcc Ala	cgg Arg	gcc Ala	cgc Arg	ctg Leu 555	ggg Gly	gaa Glu	ggg Gly	gtc Val	tac Tyr 560	1680
gtc Val	ccc Pro	gag Glu	gac Asp	aac Asn 565	cct Pro	gag Glu	ggg Gly	ctg Leu	gac Asp 570	tac Tyr	gcc Ala	agg Arg	aag Lys	gcg Ala 575	ggc Gly	1728
ttc Phe	cgc Arg	ctc Leu	ctc Leu 580	ccc Pro	ccc Pro	gag Glu	gag Glu	gcc Ala 585	ggg Gly	ctt Leu	tgg Trp	ctc Leu	ggc Gly 590	ctc Leu	ccc Pro	1776
cca Pro	agg Arg	ccg Pro 595	gtc Val	ctg Leu	ggc Gly	agg Arg	cgg Arg 600	gtg Val	gag Glu	gtg Val	gcc Ala	ctg Leu 605	ggg Gly	cgg Arg	gag Glu	1824
gcg Ala 610	cgg Arg	gcc Ala	agg Arg	ctt Leu	tcc Ser	gcc Ala 615	ccc Pro	ccc Pro	gtc Val	ctc Leu	cac His 620	acc Thr	ccc Pro	gag Glu	gcc Ala	1872
cgg Arg 625	ctc Leu	aaa Lys	gcc Ala	ctc Leu	gtc Val 630	cac His	cgc Arg	cgc Arg	ctc Leu	ctc Leu 635	ttc Phe	gcc Ala	tac Tyr	gag Glu	cgc Arg 640	1920

cgt cac ccg ggc ctc ttc agc gag gcc ctc ctc gcc tac tgg gag gtg 1968
 Arg His Pro Gly Leu Phe Ser Glu Ala Leu Leu Ala Tyr Trp Glu Val
 645 650 655

aac cgt gta cag gag ccc gcg gga agc cca 1998
 Asn Arg Val Gln Glu Pro Ala Gly Ser Pro
 660 665

<210> 4

<211> 666

<212> PRT

<213> Thermus thermophilus

<400> 4

Met Arg Asp Arg Val Arg Trp Arg Val Leu Ser Leu Pro Pro Leu Ala
 1 5 10 15

Gln Trp Arg Glu Val Met Ala Ala Leu Glu Val Gly Pro Glu Ala Ala
 20 25 30

Leu Ala Tyr Trp His Arg Gly Phe Arg Arg Lys Glu Asp Leu Asp Pro
 35 40 45

Pro Leu Ala Leu Leu Pro Leu Lys Gly Leu Arg Glu Ala Ala Ala Leu
 50 55 60

Leu Glu Glu Ala Leu Arg Gln Gly Lys Arg Ile Arg Val His Gly Asp
 65 70 75 80

Tyr Asp Ala Asp Gly Leu Thr Gly Thr Ala Ile Leu Val Arg Gly Leu
 85 90 95

Ala Ala Leu Gly Ala Asp Val His Pro Phe Ile Pro His Arg Leu Glu
 100 105 110

Glu Gly Tyr Gly Val Leu Met Glu Arg Val Pro Glu His Leu Glu Ala
 115 120 125

Ser Asp Leu Phe Leu Thr Val Asp Cys Gly Ile Thr Asn His Ala Glu
 130 135 140

Leu Arg Glu Leu Leu Glu Asn Gly Val Glu Val Ile Val Thr Asp His
 145 150 155 160

His Thr Pro Gly Lys Thr Pro Ser Pro Gly Leu Val Val His Pro Ala
 165 170 175

Leu Thr Pro Asp Leu Lys Glu Lys Pro Thr Gly Ala Gly Val Val Phe
 180 185 190

11283-013001.ST25.txt

Leu Leu Leu Trp Ala Leu His Glu Arg Leu Gly Leu Pro Pro Pro Leu
 195 200 205
 Glu Tyr Ala Asp Leu Ala Ala Val Gly Thr Ile Ala Asp Val Ala Pro
 210 215 220
 Leu Trp Gly Trp Asn Arg Ala Leu Val Lys Glu Gly Leu Ala Arg Ile
 225 230 235 240
 Pro Ala Ser Ser Trp Val Gly Leu Arg Leu Leu Ala Glu Ala Val Gly
 245 250 255
 Tyr Thr Gly Lys Ala Val Glu Val Ala Phe Arg Ile Ala Pro Arg Ile
 260 265 270
 Asn Ala Ala Ser Arg Leu Gly Glu Ala Glu Lys Ala Leu Arg Leu Leu
 275 280 285
 Leu Thr Asp Asp Ala Ala Glu Ala Gln Ala Leu Val Gly Glu Leu His
 290 295 300
 Arg Leu Asn Ala Arg Arg Gln Thr Leu Glu Glu Ala Met Leu Arg Lys
 305 310 315 320
 Leu Leu Pro Gln Ala Asp Pro Glu Ala Lys Ala Ile Val Leu Leu Asp
 325 330 335
 Pro Glu Gly His Pro Gly Val Met Gly Ile Val Ala Ser Arg Ile Leu
 340 345 350
 Glu Ala Thr Leu Arg Pro Val Phe Leu Val Ala Gln Gly Lys Gly Thr
 355 360 365
 Val Arg Ser Leu Ala Pro Ile Ser Ala Val Glu Ala Leu Arg Ser Ala
 370 375 380
 Glu Asp Leu Leu Leu Arg Tyr Gly Gly His Lys Glu Ala Ala Gly Phe
 385 390 395 400
 Ala Met Asp Glu Ala Leu Phe Pro Ala Phe Lys Ala Arg Val Glu Ala
 405 410 415
 Tyr Ala Ala Arg Phe Pro Asp Pro Val Arg Glu Val Ala Leu Leu Asp
 420 425 430
 Leu Leu Pro Glu Pro Gly Leu Leu Pro Gln Val Phe Arg Glu Leu Ala
 435 440 445

Leu Leu Glu Pro Tyr Gly Glu Gly Asn Pro Glu Pro Leu Phe Leu Leu
 450 455 460

Phe Gly Ala Pro Glu Glu Ala Arg Arg Leu Gly Glu Gly Arg His Leu
 465 470 475 480

Ala Phe Arg Leu Lys Gly Val Arg Val Leu Ala Trp Lys Gln Gly Asp
 485 490 495

Leu Ala Leu Pro Pro Glu Val Glu Val Ala Gly Leu Leu Ser Glu Asn
 500 505 510

Ala Trp Asn Gly His Leu Ala Tyr Glu Val Gln Ala Val Asp Leu Arg
 515 520 525

Lys Pro Glu Ala Leu Glu Gly Gly Ile Ala Pro Phe Ala Tyr Pro Leu
 530 535 540

Pro Leu Leu Glu Ala Leu Ala Arg Ala Arg Leu Gly Glu Gly Val Tyr
 545 550 555 560

Val Pro Glu Asp Asn Pro Glu Gly Leu Asp Tyr Ala Arg Lys Ala Gly
 565 570 575

Phe Arg Leu Leu Pro Pro Glu Glu Ala Gly Leu Trp Leu Gly Leu Pro
 580 585 590

Pro Arg Pro Val Leu Gly Arg Arg Val Glu Val Ala Leu Gly Arg Glu
 595 600 605

Ala Arg Ala Arg Leu Ser Ala Pro Pro Val Leu His Thr Pro Glu Ala
 610 615 620

Arg Leu Lys Ala Leu Val His Arg Arg Leu Leu Phe Ala Tyr Glu Arg
 625 630 635 640

Arg His Pro Gly Leu Phe Ser Glu Ala Leu Leu Ala Tyr Trp Glu Val
 645 650 655

Asn Arg Val Gln Glu Pro Ala Gly Ser Pro
 660 665

<210> 5

<211> 1029

<212> DNA

<213> Thermus thermophilus

<220>

<221> CDS

<222> (1)..(1029)

<400> 5

atg	cgg	ctt	ctc	ctc	ttc	cgg	caa	cgg	aac	ttc	cgc	aac	ctg	gcc	ctg	48
Met	Arg	Leu	Leu	Leu	Phe	Arg	Gln	Arg	Asn	Phe	Arg	Asn	Leu	Ala	Leu	
1				5					10					15		

gag	gcc	tac	cgc	ccc	ccg	ccg	ggc	ctt	tcc	gcc	ctg	gtg	ggg	gcc	aac	96
Glu	Ala	Tyr	Arg	Pro	Pro	Pro	Gly	Leu	Ser	Ala	Leu	Val	Gly	Ala	Asn	
			20					25					30			

gcc	cag	ggg	aag	acg	agc	ctc	ctc	ctg	ggg	atc	cac	ctg	gcc	cta	ggg	144
Ala	Gln	Gly	Lys	Thr	Ser	Leu	Leu	Leu	Gly	Ile	His	Leu	Ala	Leu	Gly	
		35					40					45				

ggg	gag	gtc	ccc	ctg	ggc	ctt	gcc	gac	ctc	gtc	cgc	ttc	ggg	gag	gag	192
Gly	Glu	Val	Pro	Leu	Gly	Leu	Ala	Asp	Leu	Val	Arg	Phe	Gly	Glu	Glu	
	50					55					60					

gag	gcc	tgg	ctc	cac	gcc	gag	gtg	gag	acg	gag	ctc	ggg	gcc	tac	cgc	240
Glu	Ala	Trp	Leu	His	Ala	Glu	Val	Glu	Thr	Glu	Leu	Gly	Ala	Tyr	Arg	
65					70					75					80	

ctg	gag	cac	cgc	ctg	ggc	ccc	ggg	ggg	cgg	gag	gtc	ctc	ctc	aac	ggg	288
Leu	Glu	His	Arg	Leu	Gly	Pro	Gly	Gly	Arg	Glu	Val	Leu	Leu	Asn	Gly	
				85					90					95		

aag	cgg	gtg	agc	ctt	cgg	acc	ctt	tgg	gag	ctt	ccc	ggc	tcg	gtc	ctc	336
Lys	Arg	Val	Ser	Leu	Arg	Thr	Leu	Trp	Glu	Leu	Pro	Gly	Ser	Val	Leu	
			100					105					110			

gtc	tcc	cct	ctg	gac	ctc	gag	gcg	gtc	ctc	ggg	ccc	aag	gag	gag	cgg	384
Val	Ser	Pro	Leu	Asp	Leu	Glu	Ala	Val	Leu	Gly	Pro	Lys	Glu	Glu	Arg	
		115					120					125				

cgg	gcc	tac	ctg	gac	cgg	ctc	atc	gcc	cgc	ttc	tcc	cgc	cgc	tac	gcc	432
Arg	Ala	Tyr	Leu	Asp	Arg	Leu	Ile	Ala	Arg	Phe	Ser	Arg	Arg	Tyr	Ala	
	130					135					140					

gcc	ctc	ctt	tcc	gcc	tac	gag	aag	gcg	ctg	cgc	cag	cgg	aac	gcc	ctc	480
Ala	Leu	Leu	Ser	Ala	Tyr	Glu	Lys	Ala	Leu	Arg	Gln	Arg	Asn	Ala	Leu	
145					150					155					160	

ctc	aag	gcc	ggg	ggg	gag	ggc	ctt	tcc	gcc	tgg	gac	cgg	gag	ctc	gcc	528
Leu	Lys	Ala	Gly	Gly	Glu	Gly	Leu	Ser	Ala	Trp	Asp	Arg	Glu	Leu	Ala	
				165					170					175		

cgc	tac	ggg	gac	gag	atc	gtg	gcc	ctg	agg	cgc	cgc	ttc	ctc	cgg	cgc	576
Arg	Tyr	Gly	Asp	Glu	Ile	Val	Ala	Leu	Arg	Arg	Arg	Phe	Leu	Arg	Arg	
			180					185					190			

ttc	gcc	ccc	atc	ctg	cgg	gag	gtc	cac	gcc	gcc	ctc	gcc	gcc	aag	gag	624
Phe	Ala	Pro	Ile	Leu	Arg	Glu	Val	His	Ala	Ala	Leu	Ala	Ala	Lys	Glu	
		195					200					205				

gcg	ggg	ctt	cgc	ttg	gag	gag	acc	gcg	ggg	gaa	ggg	gtg	ctc	cgg	gcc	672
Ala	Gly	Leu	Arg	Leu	Glu	Glu	Thr	Ala	Gly	Glu	Gly	Val	Leu	Arg	Ala	
	210					215					220					

ctc	gag	gcc	agc	cgg	gcc	gag	gag	cgg	gaa	cgg	ggc	cag	acc	ctg	gtg	720
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

11283-013001.ST25.txt

Leu 225	Glu	Ala	Ser	Arg	Ala 230	Glu	Glu	Arg	Glu	Arg 235	Gly	Gln	Thr	Leu	Val 240	
ggg Gly	ccc Pro	cac His	cgg Arg	gac Asp 245	gac Asp	ctg Leu	gtc Val	ttc Phe	ctc Leu 250	ctg Leu	gag Glu	ggg Gly	cgg Arg	ccc Pro 255	gcc Ala	768
cac His	cgg Arg	ttc Phe	gcc Ala 260	agc Ser	cgc Arg	ggg Gly	gag Glu	gcc Ala 265	aag Lys	acc Thr	ctg Leu	gcc Ala 270	ctg Leu	gcc Ala	ctg Leu	816
cgc Arg	ctc Leu	gcc Ala 275	gag Glu	cac His	cgc Arg	ctc Leu	ctc Leu 280	ggc Gly	gag Glu	cac His	cac His	ggc Gly 285	gag Glu	ccc Pro	ccc Pro	864
ctc Leu 290	ctc Leu	ctc Leu	gtg Val	gac Asp	gag Glu	tgg Trp 295	ggg Gly	gag Glu	gag Glu	ctg Leu	gac Asp 300	gag Glu	gcc Ala	cgc Arg	agg Arg	912
cgg Arg 305	gcc Ala	gtc Val	ctc Leu	gcc Ala	tac Tyr 310	gcc Ala	cag Gln	gcc Ala	ctg Leu	ccc Pro 315	cag Gln	gcc Ala	atc Ile	ctg Leu	gcg Ala 320	960
ggg Gly	ctg Leu	gaa Glu	gcc Ala	ccc Pro 325	ccg Pro	ggg Gly	gtg Val	ccg Pro	gta Val 330	tgc Cys	tcg Ser	gtg Val	gta Val	cga Arg 335	ggg Gly	1008
gtg Val	gtc Val	ctg Leu	tgc Cys 340	cct Pro	ggc Gly	gcc Ala										1029

<210> 6
 <211> 343
 <212> PRT
 <213> Thermus thermophilus
 <400> 6

Met 1	Arg	Leu	Leu	Leu 5	Phe	Arg	Gln	Arg 10	Asn	Phe	Arg	Asn	Leu	Ala 15	Leu
Glu	Ala	Tyr	Arg 20	Pro	Pro	Pro	Gly	Leu 25	Ser	Ala	Leu	Val	Gly 30	Ala	Asn
Ala	Gln	Gly 35	Lys	Thr	Ser	Leu	Leu 40	Leu	Gly	Ile	His	Leu 45	Ala	Leu	Gly
Gly 50	Glu	Val	Pro	Leu	Gly	Leu 55	Ala	Asp	Leu	Val	Arg 60	Phe	Gly	Glu	Glu
Glu 65	Ala	Trp	Leu	His	Ala 70	Glu	Val	Glu	Thr	Glu 75	Leu	Gly	Ala	Tyr	Arg 80
Leu	Glu	His	Arg	Leu 85	Gly	Pro	Gly	Gly	Arg 90	Glu	Val	Leu	Leu	Asn 95	Gly

Lys Arg Val Ser Leu Arg Thr Leu Trp Glu Leu Pro Gly Ser Val Leu
 100 105 110
 Val Ser Pro Leu Asp Leu Glu Ala Val Leu Gly Pro Lys Glu Glu Arg
 115 120 125
 Arg Ala Tyr Leu Asp Arg Leu Ile Ala Arg Phe Ser Arg Arg Tyr Ala
 130 135 140
 Ala Leu Leu Ser Ala Tyr Glu Lys Ala Leu Arg Gln Arg Asn Ala Leu
 145 150 155 160
 Leu Lys Ala Gly Gly Glu Gly Leu Ser Ala Trp Asp Arg Glu Leu Ala
 165 170 175
 Arg Tyr Gly Asp Glu Ile Val Ala Leu Arg Arg Arg Phe Leu Arg Arg
 180 185 190
 Phe Ala Pro Ile Leu Arg Glu Val His Ala Ala Leu Ala Ala Lys Glu
 195 200 205
 Ala Gly Leu Arg Leu Glu Glu Thr Ala Gly Glu Gly Val Leu Arg Ala
 210 215 220
 Leu Glu Ala Ser Arg Ala Glu Glu Arg Glu Arg Gly Gln Thr Leu Val
 225 230 235 240
 Gly Pro His Arg Asp Asp Leu Val Phe Leu Leu Glu Gly Arg Pro Ala
 245 250 255
 His Arg Phe Ala Ser Arg Gly Glu Ala Lys Thr Leu Ala Leu Ala Leu
 260 265 270
 Arg Leu Ala Glu His Arg Leu Leu Gly Glu His His Gly Glu Pro Pro
 275 280 285
 Leu Leu Leu Val Asp Glu Trp Gly Glu Glu Leu Asp Glu Ala Arg Arg
 290 295 300
 Arg Ala Val Leu Ala Tyr Ala Gln Ala Leu Pro Gln Ala Ile Leu Ala
 305 310 315 320
 Gly Leu Glu Ala Pro Pro Gly Val Pro Val Cys Ser Val Val Arg Gly
 325 330 335
 Val Val Leu Cys Pro Gly Ala
 340

<210> 7
 <211> 2934
 <212> DNA
 <213> *Thermus thermophilus*

<220>
 <221> CDS
 <222> (1)..(2934)

<400> 7
 atg gaa atc gcg cta gag agg atc tac ggc cac cgc ctg gcg ctc ccg 48
 Met Glu Ile Ala Leu Glu Arg Ile Tyr Gly His Arg Leu Ala Leu Pro
 1 5 10 15
 cag gtg ggg gcg gcc ttg ctt ttc gcc cag gag gcc ccc ccg gcc ctc 96
 Gln Val Gly Ala Ala Leu Leu Phe Ala Gln Glu Ala Pro Pro Ala Leu
 20 25 30
 ctc ctc gtc ccc gag gcg cgg ctt agg cgc tac cgg gac ctc tcc gcc 144
 Leu Leu Val Pro Glu Ala Arg Leu Arg Arg Tyr Arg Asp Leu Ser Ala
 35 40 45
 ttc ggg gcc aag gtc tac gtg aac ccc ggc ctc gag gcc ctg gag gaa 192
 Phe Gly Ala Lys Val Tyr Val Asn Pro Gly Leu Glu Ala Leu Glu Glu
 50 55 60
 aaa gcc ctc ttc gtc ctc tcc tac gag gag gcc cta agc ccc ttc ccc 240
 Lys Ala Leu Phe Val Leu Ser Tyr Glu Glu Ala Leu Ser Pro Phe Pro
 65 70 75 80
 gag gac cct gag gcc tgg cgg ctt ctt ctg gag gtg ggc cgc gcc tac 288
 Glu Asp Pro Glu Ala Trp Arg Leu Leu Leu Glu Val Gly Arg Ala Tyr
 85 90 95
 ccc cgg gag gcc ctc ctc tcc cgc ctc ctc aag ctg ggc tac gcc cgg 336
 Pro Arg Glu Ala Leu Leu Ser Arg Leu Leu Lys Leu Gly Tyr Ala Arg
 100 105 110
 gac gag gac tac cgc gtc ctg ggg gag gtg gtg gag ctc ggc gag gtg 384
 Asp Glu Asp Tyr Arg Val Leu Gly Glu Val Val Glu Leu Gly Glu Val
 115 120 125
 cgc ctg gag ttc ttc ggg gac gag ctg gaa agg ctt gtg gtc cgg ggg 432
 Arg Leu Glu Phe Phe Gly Asp Glu Leu Glu Arg Arg Val Val Arg Gly
 130 135 140
 gag gaa agg cgg cgc cac gtc ctt ctg ccc aag ccg ggg aag gcg gag 480
 Glu Glu Arg Arg Arg His Val Leu Leu Pro Lys Pro Gly Lys Ala Glu
 145 150 155 160
 ggc ttc acc tcc aag aag gtc ctc cac ttc cct ggc ccc gtc tac ctg 528
 Gly Phe Thr Ser Lys Lys Val Leu His Phe Pro Gly Pro Val Tyr Leu
 165 170 175
 gac acc ccc gcc ctc gcc ccc aag gcc ctt tgg ccc ctc ctc gcg gga 576
 Asp Thr Pro Ala Leu Ala Pro Lys Ala Leu Trp Pro Leu Ala Gly
 180 185 190
 agg ccc tgg gtg gcc ctg ggc ggc ggg gtg gag ctc ccc ccc ttg gag 624
 Arg Pro Trp Val Ala Leu Gly Gly Gly Val Glu Leu Pro Pro Leu Glu
 195 200 205

11283-013001.ST25.txt

ctc Leu	ggg Gly 210	gcg Ala	agg Arg	ccc Pro	ctt Leu	cct Pro 215	cct Pro	tac Tyr	cgg Arg	gga Gly 220	agc Ser 220	ctg Leu	aag Lys	gcc Ala	ctg Leu	672
gaa Glu 225	aag Lys	gac Asp	ctc Leu	gcc Ala	cgc Arg 230	tgg Trp	ctt Leu	gcc Ala	gag Glu	ggg Gly 235	aag Lys	cgg Arg	gtc Val	cac His	ctc Leu 240	720
ttc Phe	gtg Val	ggc Gly	cac His	gcc Ala 245	cgc Arg	acc Thr	ttg Leu	gag Glu	tac Tyr 250	ctc Leu	aaa Lys	agg Arg	cgc Arg	ctc Leu 255	cag Gln	768
gcc Ala	ttc Phe	tcg Ser	ccc Pro 260	ctc Leu	atc Ile	ctg Leu	gac Asp 265	cgc Arg 265	ttc Phe	ccc Pro	ggc Gly	ccc Pro	aag Lys 270	ggg Gly	cgg Arg	816
ctt Leu	gcc Ala	ctc Leu 275	ctc Leu	ccc Pro	ggg Gly	gac Asp	ttt Phe 280	gag Glu	ggc Gly	ggg Gly	gcg Ala	gag Glu 285	tgg Trp	gga Gly	gag Glu	864
tgg Trp	gtc Val 290	ctc Leu	ctc Leu	acc Thr	gag Glu	gcc Ala 295	ctg Leu	gtc Val	ttc Phe	gcc Ala	acc Thr 300	ggg Gly	ggg Gly	gtg Val	cgg Arg	912
gcc Ala 305	agg Arg	gtc Val	cgg Arg	gta Val	ggg Gly 310	gag Glu	ggg Gly	ctc Leu	agc Ser	gac Asp 315	ccc Pro	ggg Gly	gcc Ala	ctt Leu	tcc Ser 320	960
cca Pro	ggg Gly	gac Asp	tac Tyr	ctc Leu 325	atc Ile	cac His	ccg Pro	gag Glu	cac His 330	ggc Gly	gtc Val	ggg Gly	cag Gln	tac Tyr 335	ctg Leu	1008
ggc Gly	ctc Leu	gag Glu	acc Thr 340	cgg Arg	gag Glu	gtc Val	ctg Leu	ggg Gly 345	gtc Val	aag Lys	cgg Arg	gac Asp	tac Tyr 350	ctg Leu	gtc Val	1056
ctg Leu	cgc Arg	tac Tyr 355	aag Lys	ggg Gly	gaa Glu	ggg Gly	aag Lys 360	ctc Leu	tac Tyr	ctc Leu	ccc Pro	gtg Val 365	gag Glu	cag Gln	ctt Leu	1104
ccc Pro 370	ctc Leu	ctc Leu	aag Lys	cgc Arg	cac His	ccc Pro 375	ggg Gly	acc Thr	acc Thr	gac Asp	gac Asp 380	ccc Pro	ccg Pro	gag Glu	ctt Leu	1152
tcc Ser 385	tcc Ser	ctg Leu	ggc Gly	aag Lys	aac Asn 390	gag Glu	tgg Trp	caa Gln	agg Arg	gcc Ala 395	aag Lys	gag Glu	cgg Arg	gcg Ala	cgg Arg 400	1200
aag Lys	gac Asp	gtg Val	gag Glu	gag Glu 405	ctg Leu	gct Ala	ggg Gly	cgc Arg	ctc Leu 410	ctc Leu	gtc Val	ctc Leu	cag Gln	gcc Ala 415	aag Lys	1248
cgc Arg	aag Lys	gcc Ala	acc Thr 420	ccg Pro	ggc Gly	cgg Arg	gcc Ala	ttt Phe 425	ccc Pro	cct Pro	ttg Leu	ccc Pro	gag Glu 430	tgg Trp	gat Asp	1296
cct Pro	ctg Leu	gtg Val 435	gag Glu	aag Lys	ggg Gly	ttc Phe	ccc Pro 440	tac Tyr	gag Glu	ctc Leu	acc Thr	ccc Pro 445	gac Asp	cag Gln	aag Lys	1344
cgg Arg	gcc Ala	ctg Leu	gag Glu	gag Glu	gtc Val	ctc Leu	cgc Arg	gac Asp	ctg Leu	gaa Glu	agc Ser	ccc Pro	cac His	ccc Pro	atg Met	1392

450	455	460	
gac Asp 465	cgc Arg	ctg Leu	gtc Val
tcg Ser	ggg Gly 470	gac Asp	gtg Val
ggc Gly	ttc Phe	ggc Gly 475	aag Lys
acg Thr	gag Glu	gtg Val	gcc Ala 480
ctg Leu	agg Arg	gcc Ala	cac His 485
cgg Arg	gtg Val	gtg Val	ggg Gly
cac His 490	ggg Gly	gcc Ala	cag Gln
gtg Val	gcc Ala	495	ttc Phe
ctg Leu	ggg Gly	cca Pro	acc Thr 500
acc Thr	ctc Leu	ctc Leu	gcc Ala
gag Glu 505	cag Gln	cac His	ggg Gly
aag Lys	acc Thr 510	ttt Phe	agg Arg
gag Glu	cgc Arg	ttc Phe	515
cag Gln	ggg Gly	ctt Leu	ccc Pro
gtg Val 520	agg Arg	gtt Val	gcg Ala
gtc Val 525	ctc Leu	tcc Ser	cgc Arg
acc Thr 530	ccg Pro	ccc Pro	aag Lys
gag Glu	gag Glu	gag Glu	535
gcc Ala	atc Ile	cta Leu	aaa Lys
ggc Gly 540	ctc Leu	ctc Leu	cag Gln
gag Glu	gac Asp	gtg Val 560	545
ctc Leu	gag Glu	gag Glu	550
ggc Gly	acc Thr	cac His	cgc Arg
ctc Leu	555	ctc Leu	560
ctc Leu	565	ggc Gly	ctc Leu
ctc Leu	570	gag Glu	gag Glu
cac His	575	cgc Arg	ttc Phe
ggc Gly	gtg Val	gag Glu	580
agg Arg	atc Ile	cgg Arg	585
gag Glu	agg Arg	atc Ile	cgc Arg
acc Thr	ccc Pro	600	acc Thr
ctc Leu	595	tac Tyr	ctc Leu
ctc Leu	605	tcc Ser	gcc Ala
ctg Leu	610	ggc Gly	ctc Leu
aaa Lys	gag Glu	agg Arg	615
gag Glu	agg Arg	atc Ile	cgg Arg
gtg Val	gag Glu	agg Arg	620
ctc Leu	ggc Gly	agg Arg	625
ggc Gly	agg Arg	atc Ile	cgg Arg
ctc Leu	ggc Gly	agg Arg	630
ggc Gly	agg Arg	atc Ile	cgg Arg
ctc Leu	ggc Gly	agg Arg	635
gat Asp	ccc Pro	ctc Leu	ttg Leu
gtg Val 640	ctc Leu	ttg Leu	645
ctc Leu	ttg Leu	650	ctc Leu
ggc Gly	agg Arg	ctc Leu	655
ggc Gly	agg Arg	ctc Leu	660
ggc Gly	agg Arg	ctc Leu	665
ggc Gly	agg Arg	ctc Leu	670
ggc Gly	agg Arg	ctc Leu	675
ggc Gly	agg Arg	ctc Leu	680
ggc Gly	agg Arg	ctc Leu	685
ggc Gly	agg Arg	ctc Leu	690
ggc Gly	agg Arg	ctc Leu	695
ggc Gly	agg Arg	ctc Leu	700
ggc Gly	agg Arg	ctc Leu	705
ggc Gly	agg Arg	ctc Leu	710
ggc Gly	agg Arg	ctc Leu	715
ggc Gly	agg Arg	ctc Leu	720
ggc Gly	agg Arg	ctc Leu	725
ggc Gly	agg Arg	ctc Leu	730
ggc Gly	agg Arg	ctc Leu	735
ggc Gly	agg Arg	ctc Leu	740
ggc Gly	agg Arg	ctc Leu	745
ggc Gly	agg Arg	ctc Leu	750
ggc Gly	agg Arg	ctc Leu	755
ggc Gly	agg Arg	ctc Leu	760
ggc Gly	agg Arg	ctc Leu	765
ggc Gly	agg Arg	ctc Leu	770
ggc Gly	agg Arg	ctc Leu	775
ggc Gly	agg Arg	ctc Leu	780
ggc Gly	agg Arg	ctc Leu	785
ggc Gly	agg Arg	ctc Leu	790
ggc Gly	agg Arg	ctc Leu	795
ggc Gly	agg Arg	ctc Leu	800
ggc Gly	agg Arg	ctc Leu	805
ggc Gly	agg Arg	ctc Leu	810
ggc Gly	agg Arg	ctc Leu	815
ggc Gly	agg Arg	ctc Leu	820
ggc Gly	agg Arg	ctc Leu	825
ggc Gly	agg Arg	ctc Leu	830
ggc Gly	agg Arg	ctc Leu	835
ggc Gly	agg Arg	ctc Leu	840
ggc Gly	agg Arg	ctc Leu	845
ggc Gly	agg Arg	ctc Leu	850
ggc Gly	agg Arg	ctc Leu	855
ggc Gly	agg Arg	ctc Leu	860
ggc Gly	agg Arg	ctc Leu	865
ggc Gly	agg Arg	ctc Leu	870
ggc Gly	agg Arg	ctc Leu	875
ggc Gly	agg Arg	ctc Leu	880
ggc Gly	agg Arg	ctc Leu	885
ggc Gly	agg Arg	ctc Leu	890
ggc Gly	agg Arg	ctc Leu	895
ggc Gly	agg Arg	ctc Leu	900
ggc Gly	agg Arg	ctc Leu	905
ggc Gly	agg Arg	ctc Leu	910
ggc Gly	agg Arg	ctc Leu	915
ggc Gly	agg Arg	ctc Leu	920
ggc Gly	agg Arg	ctc Leu	925
ggc Gly	agg Arg	ctc Leu	930
ggc Gly	agg Arg	ctc Leu	935
ggc Gly	agg Arg	ctc Leu	940
ggc Gly	agg Arg	ctc Leu	945
ggc Gly	agg Arg	ctc Leu	950
ggc Gly	agg Arg	ctc Leu	955
ggc Gly	agg Arg	ctc Leu	960
ggc Gly	agg Arg	ctc Leu	965
ggc Gly	agg Arg	ctc Leu	970
ggc Gly	agg Arg	ctc Leu	975
ggc Gly	agg Arg	ctc Leu	980
ggc Gly	agg Arg	ctc Leu	985
ggc Gly	agg Arg	ctc Leu	990
ggc Gly	agg Arg	ctc Leu	995
ggc Gly	agg Arg	ctc Leu	1000

11283-013001.ST25.txt

Asp 705	Val	Leu	Leu	Ala	Thr 710	Thr	Ile	Ile	Glu	Ala 715	Gly	Leu	Asp	Val	Pro 720	
gag Glu	gcg Ala	aac Asn	acc Thr	atc Ile 725	ctc Leu	att Ile	gag Glu	cgg Arg	gcg Ala 730	gac Asp	cgc Arg	ctg Leu	ggc Gly 735	ctc Leu	gcc Ala	2208
acc Thr	ttg Leu	tac Tyr	cag Gln 740	ctc Leu	cgg Arg	ggc Gly	cgg Arg	gtg Val 745	ggg Gly	cgg Arg	agg Arg	gag Glu	gag Glu 750	gag Glu	gcc Ala	2256
tac Tyr	gcc Ala	tac Tyr 755	ctc Leu	ttc Phe	cac His	ccg Pro	cct Pro 760	cgc Arg	ctc Leu	acc Thr	gag Glu	gcc Ala 765	gag Ala	gag Glu	aag Lys	2304
cgc Arg 770	ctc Leu	gcc Ala	gcc Ala	atc Ile	gcc Ala	gac Asp 775	ctc Leu	tcc Ser	gat Asp	ctg Leu	ggc Gly 780	tcg Ser	ggc Gly	cac His	ctc Leu	2352
ctg Leu 785	gcc Ala	gaa Glu	agg Arg	gac Asp	atg Met 790	gaa Glu	atc Ile	cgg Arg	ggc Gly	gtg Val 795	ggg Gly	aac Asn	ctt Leu	ttg Leu	ggg Gly 800	2400
ccg Pro	gag Glu	cag Gln	cac His	ggg Gly 805	cac His	atc Ile	cgg Arg	gag Ala	ctt Leu 810	tcc Ser	ctc Leu	gag Glu	gtc Val	tac Tyr 815	acc Thr	2448
gag Glu	ctt Leu	ctg Leu	gaa Glu 820	gag Glu	gcc Ala	atc Ile	cgc Arg	aag Lys 825	ctc Leu	aag Lys	ggg Gly	gag Glu	gcc Ala 830	aag Lys	gag Glu	2496
gag Glu	cgg Arg	cgg Arg	cac His 835	gtg Val	acc Thr	ctg Leu	gac Asp 840	ctc Leu	gcc Ala	ctc Leu	tcc Ser	gcc Ala 845	cgg Arg	ctg Leu	ccc Pro	2544
gag Ala 850	gag Glu	tac Tyr	gtg Val	ggg Gly	agc Ser	ctc Leu 855	gag Glu	gcc Ala	agg Arg	agc Ser	cgc Arg 860	tac Tyr	tac Tyr	agc Ser	cgt Arg	2592
ttt Phe 865	gcc Ala	gag Glu	gag Ala	aaa Lys	agc Ser 870	ctc Leu	gcc Ala	gag Glu	ctt Leu	tcc Ser 875	cgc Arg	ctg Leu	gtg Val	cgg Arg	gag Glu 880	2640
ctc Leu	aaa Lys	gag Glu	cgc Arg	tac Tyr 885	ggg Gly	ccc Pro	ctt Leu	cct Pro	gag Glu 890	gag Glu	gag Ala	gag Glu	aac Asn	ttc Phe 895	gtg Val	2688
gcc Ala	ctc Leu	gcc Ala	cgg Arg 900	ctc Leu	cgc Arg	ctg Leu	gtg Val	gag Ala 905	gag Glu	agg Arg	aag Lys	ggg Gly	gtg Val 910	gtg Val	tcc Ser	2736
atc Ile	acg Thr	gag Glu 915	ggc Gly	ctc Leu	acc Thr	cac His	ctg Leu 920	gag Glu	gtg Val	gtc Val	ttc Phe	ccc Pro 925	cgc Arg	tac Tyr	ccc Pro	2784
ctg Leu	gac Asp 930	tac Tyr	gac Asp	gcc Ala	cgc Arg	ggc Gly 935	ctc Leu	aag Lys	ggg Gly	ctt Leu	ccc Pro 940	tac Tyr	cgg Arg	gtg Val	gag Glu	2832
ctt Leu 945	acg Thr	cag Gln	tac Tyr	ccg Pro	ccc Pro 950	ggg Gly	ttc Phe	cgc Arg	ctg Leu	gag Glu 955	aag Lys	aag Lys	ggc Gly	ctg Leu	agg Arg 960	2880

ccc cgg gac tac ccc gag gcc ctg atg gag gtg ctc tac ctc ttc gcc 2928
 Pro Arg Asp Tyr Pro Glu Ala Leu Met Glu Val Leu Tyr Leu Phe Ala
 965 970 975

gac ctc 2934
 Asp Leu

<210> 8
 <211> 978
 <212> PRT
 <213> Thermus thermophilus

<400> 8

Met Glu Ile Ala Leu Glu Arg Ile Tyr Gly His Arg Leu Ala Leu Pro
 1 5 10 15

Gln Val Gly Ala Ala Leu Leu Phe Ala Gln Glu Ala Pro Pro Ala Leu
 20 25 30

Leu Leu Val Pro Glu Ala Arg Leu Arg Arg Tyr Arg Asp Leu Ser Ala
 35 40 45

Phe Gly Ala Lys Val Tyr Val Asn Pro Gly Leu Glu Ala Leu Glu Glu
 50 55 60

Lys Ala Leu Phe Val Leu Ser Tyr Glu Glu Ala Leu Ser Pro Phe Pro
 65 70 75 80

Glu Asp Pro Glu Ala Trp Arg Leu Leu Leu Glu Val Gly Arg Ala Tyr
 85 90 95

Pro Arg Glu Ala Leu Leu Ser Arg Leu Leu Lys Leu Gly Tyr Ala Arg
 100 105 110

Asp Glu Asp Tyr Arg Val Leu Gly Glu Val Val Glu Leu Gly Glu Val
 115 120 125

Arg Leu Glu Phe Phe Gly Asp Glu Leu Glu Arg Leu Val Val Arg Gly
 130 135 140

Glu Glu Arg Arg Arg His Val Leu Leu Pro Lys Pro Gly Lys Ala Glu
 145 150 155 160

Gly Phe Thr Ser Lys Lys Val Leu His Phe Pro Gly Pro Val Tyr Leu
 165 170 175

Asp Thr Pro Ala Leu Ala Pro Lys Ala Leu Trp Pro Leu Leu Ala Gly
 180 185 190

11283-013001.ST25.txt

Arg Pro Trp Val Ala Leu Gly Gly Gly Val Glu Leu Pro Pro Leu Glu
195 200 205

Leu Gly Ala Arg Pro Leu Pro Pro Tyr Arg Gly Ser Leu Lys Ala Leu
210 215 220

Glu Lys Asp Leu Ala Arg Trp Leu Ala Glu Gly Lys Arg Val His Leu
225 230 235 240

Phe Val Gly His Ala Arg Thr Leu Glu Tyr Leu Lys Arg Arg Leu Gln
245 250 255

Ala Phe Ser Pro Leu Ile Leu Asp Arg Phe Pro Gly Pro Lys Gly Arg
260 265 270

Leu Ala Leu Leu Pro Gly Asp Phe Glu Gly Gly Ala Glu Trp Gly Glu
275 280 285

Trp Val Leu Leu Thr Glu Ala Leu Val Phe Ala Thr Gly Gly Val Arg
290 295 300

Ala Arg Val Arg Val Gly Glu Gly Leu Ser Asp Pro Gly Ala Leu Ser
305 310 315 320

Pro Gly Asp Tyr Leu Ile His Pro Glu His Gly Val Gly Gln Tyr Leu
325 330 335

Gly Leu Glu Thr Arg Glu Val Leu Gly Val Lys Arg Asp Tyr Leu Val
340 345 350

Leu Arg Tyr Lys Gly Glu Gly Lys Leu Tyr Leu Pro Val Glu Gln Leu
355 360 365

Pro Leu Leu Lys Arg His Pro Gly Thr Thr Asp Asp Pro Pro Glu Leu
370 375 380

Ser Ser Leu Gly Lys Asn Glu Trp Gln Arg Ala Lys Glu Arg Ala Arg
385 390 395 400

Lys Asp Val Glu Glu Leu Ala Gly Arg Leu Leu Val Leu Gln Ala Lys
405 410 415

Arg Lys Ala Thr Pro Gly Arg Ala Phe Pro Pro Leu Pro Glu Trp Asp
420 425 430

Pro Leu Val Glu Lys Gly Phe Pro Tyr Glu Leu Thr Pro Asp Gln Lys
435 440 445

Arg Ala Leu Glu Glu Val Leu Arg Asp Leu Glu Ser Pro His Pro Met
450 455 460

Asp Arg Leu Val Ser Gly Asp Val Gly Phe Gly Lys Thr Glu Val Ala
465 470 475 480

Leu Arg Ala Ala His Arg Val Val Gly His Gly Ala Gln Val Ala Phe
485 490 495

Leu Gly Pro Thr Thr Leu Leu Ala Glu Gln His Gly Lys Thr Phe Arg
500 505 510

Glu Arg Phe Gln Gly Leu Pro Val Arg Val Ala Val Leu Ser Arg Phe
515 520 525

Thr Pro Pro Lys Glu Glu Glu Ala Ile Leu Lys Gly Leu Ala Glu Gly
530 535 540

Thr Val Asp Ile Val Ile Gly Thr His Arg Leu Leu Gln Glu Asp Val
545 550 555 560

Arg Phe Arg Asp Leu Gly Leu Leu Ile Val Asp Glu Glu His Arg Phe
565 570 575

Gly Val Ala Gln Lys Glu Arg Ile Arg Glu Leu Lys Ala Glu Val Asp
580 585 590

Thr Leu Tyr Leu Ser Ala Thr Pro Ile Pro Arg Thr Leu Tyr Ser Ala
595 600 605

Leu Val Gly Leu Lys Asp Leu Ser Ser Ile Gln Thr Pro Pro Pro Gly
610 615 620

Arg Lys Pro Ile Lys Thr Phe Leu Ala Pro Phe Asp Pro Leu Leu Val
625 630 635 640

Arg Glu Ala Ile Leu Phe Glu Leu Glu Arg Gly Gly Lys Val Phe Tyr
645 650 655

Val His Asp Arg Val Ala Ser Ile Glu Ala Arg Arg Arg Phe Leu Glu
660 665 670

Asn Leu Val Pro Glu Ala Arg Ile Gly Val Val His Gly Gln Met Pro
675 680 685

Glu Ser Leu Ile Glu Glu Thr Met Leu Leu Phe Ala Glu Gly Ala Tyr
Page 19

690

695

Asp Val Leu Leu Ala Thr Thr Ile Ile Glu Ala Gly Leu Asp Val Pro
705 710 715 720

Glu Ala Asn Thr Ile Leu Ile Glu Arg Ala Asp Arg Leu Gly Leu Ala
725 730 735

Thr Leu Tyr Gln Leu Arg Gly Arg Val Gly Arg Arg Glu Glu Glu Ala
740 745 750

Tyr Ala Tyr Leu Phe His Pro Pro Arg Leu Thr Glu Ala Ala Glu Lys
755 760 765

Arg Leu Ala Ala Ile Ala Asp Leu Ser Asp Leu Gly Ser Gly His Leu
770 775 780

Leu Ala Glu Arg Asp Met Glu Ile Arg Gly Val Gly Asn Leu Leu Gly
785 790 795 800

Pro Glu Gln His Gly His Ile Arg Ala Leu Ser Leu Glu Val Tyr Thr
805 810 815

Glu Leu Leu Glu Glu Ala Ile Arg Lys Leu Lys Gly Glu Ala Lys Glu
820 825 830

Glu Arg Arg His Val Thr Leu Asp Leu Ala Leu Ser Ala Arg Leu Pro
835 840 845

Ala Glu Tyr Val Gly Ser Leu Glu Ala Arg Ser Arg Tyr Tyr Ser Arg
850 855 860

Phe Ala Glu Ala Lys Ser Leu Ala Glu Leu Ser Arg Leu Val Arg Glu
865 870 875 880

Leu Lys Glu Arg Tyr Gly Pro Leu Pro Glu Glu Ala Glu Asn Phe Val
885 890 895

Ala Leu Ala Arg Leu Arg Leu Val Ala Glu Arg Lys Gly Val Val Ser
900 905 910

Ile Thr Glu Gly Leu Thr His Leu Glu Val Val Phe Pro Arg Tyr Pro
915 920 925

Leu Asp Tyr Asp Ala Arg Gly Leu Lys Gly Leu Pro Tyr Arg Val Glu
930 935 940

Leu Thr Gln Tyr Pro Pro Gly Phe Arg Leu Glu Lys Lys Gly Leu Arg
 945 950 955 960

Pro Arg Asp Tyr Pro Glu Ala Leu Met Glu Val Leu Tyr Leu Phe Ala
 965 970 975

Asp Leu

<210> 9
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic DNA

<400> 9
 atatcatatg gaagcctggc ggaaagccct cctcgcct

38

<210> 10
 <211> 41
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic DNA

<400> 10
 atatagatct ttattatgcg tccgggaggg ggactacgcc c

41

<210> 11
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic DNA

<400> 11
 atcatatgag agaccgggtc cgctggcggg t

31

<210> 12
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic DNA

<400> 12
 atagatcttt acaggtccac cgctggacc tc

32

<210> 13
 <211> 49
 <212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 13

actacttggt acactgacgc gagcacgcag gagctcattc cagtgcgca

49

<210> 14

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 14

atatcatatg cgtcttctcc tcttcggca acggaact

38

<210> 15

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 15

atatagatct ttattaggcg ccagggcaca ggaccacccc t

41

<210> 16

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 16

atatcatatg gaaatcgcg tagagaggat ctacggcc

38

<210> 17

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 17

atatagatct ttattaggagg tcggcgaaga ggtagagcac c

41

<210> 18

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic DNA

<400> 18

agatcttgac ggggaaaycc gaattcggcg aacgtggcga g

41

<210> 19

<211> 45

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic DNA

<220>

<221> misc_feature

<222> (26)..(26)

<223> n is a, c, g, or t

<400> 19

ttctcgccac gttcgccgaa ttcggnnttc cccgtcaaga tctaa

45

<210> 20

<211> 485

<212> PRT

<213> Homo sapiens

<400> 20

Cys Asp Gly Leu Ala Arg Gln Pro Glu Glu Val Val Leu Gln Ala Ser
1 5 10 15

Val Ser Ser Tyr His Leu Phe Arg Asp Val Ala Glu Val Thr Ala Phe
20 25 30

Arg Gly Ser Leu Leu Ser Trp Tyr Asp Gln Glu Lys Arg Asp Leu Pro
35 40 45

Trp Arg Arg Arg Ala Glu Asp Glu Met Asp Leu Asp Arg Arg Ala Tyr
50 55 60

Ala Val Trp Val Ser Glu Val Met Leu Gln Gln Thr Gln Val Ala Thr
65 70 75 80

Val Ile Asn Tyr Tyr Thr Gly Trp Met Gln Lys Trp Pro Thr Leu Gln
85 90 95

Asp Leu Ala Ser Ala Ser Leu Glu Glu Val Asn Gln Leu Trp Ala Gly
100 105 110

Leu Gly Tyr Tyr Ser Arg Gly Arg Arg Leu Gln Glu Gly Ala Arg Lys
115 120 125

Val Val Glu Glu Leu Gly Gly His Met Pro Arg Thr Ala Glu Thr Leu
 130 135 140

Gln Gln Leu Leu Pro Gly Val Gly Arg Tyr Thr Ala Gly Ala Ile Ala
 145 150 155 160

Ser Ile Ala Phe Gly Gln Ala Thr Gly Val Val Asp Gly Asn Val Ala
 165 170 175

Arg Val Leu Cys Arg Val Arg Ala Ile Gly Ala Asp Pro Ser Ser Thr
 180 185 190

Leu Val Ser Gln Gln Leu Trp Gly Leu Ala Gln Gln Leu Val Asp Pro
 195 200 205

Ala Arg Pro Gly Asp Phe Asn Gln Ala Ala Met Glu Leu Gly Ala Thr
 210 215 220

Val Cys Thr Pro Gln Arg Pro Leu Cys Ser Gln Cys Pro Val Glu Ser
 225 230 235 240

Leu Cys Arg Ala Arg Gln Arg Val Glu Gln Glu Gln Leu Leu Ala Ser
 245 250 255

Gly Ser Leu Ser Gly Ser Pro Asp Val Glu Glu Cys Ala Pro Asn Thr
 260 265 270

Gly Gln Cys His Leu Cys Leu Pro Pro Ser Glu Pro Trp Asp Gln Thr
 275 280 285

Leu Gly Val Val Asn Phe Pro Arg Lys Ala Ser Arg Lys Pro Pro Arg
 290 295 300

Glu Glu Ser Ser Ala Thr Cys Val Leu Glu Gln Pro Gly Ala Leu Gly
 305 310 315 320

Ala Gln Ile Leu Leu Val Gln Arg Pro Asn Ser Gly Leu Leu Ala Gly
 325 330 335

Leu Trp Glu Phe Pro Ser Val Thr Trp Glu Pro Ser Glu Gln Leu Gln
 340 345 350

Arg Lys Ala Leu Leu Gln Glu Leu Gln Arg Trp Ala Gly Pro Leu Pro
 355 360 365

Ala Thr His Leu Arg His Leu Gly Glu Val Val His Thr Phe Ser His
 370 375 380

Ile Lys Leu Thr Tyr Gln Val Tyr Gly Leu Ala Leu Glu Gly Gln Thr
385 390 395 400

Pro Val Thr Thr Val Pro Pro Gly Ala Arg Trp Leu Thr Gln Glu Glu
405 410 415

Phe His Thr Ala Ala Val Ser Thr Ala Met Lys Lys Val Phe Arg Val
420 425 430

Tyr Gln Gly Gln Gln Pro Gly Thr Cys Met Gly Ser Lys Arg Ser Gln
435 440 445

Val Ser Ser Pro Cys Ser Arg Lys Lys Pro Arg Met Gly Gln Gln Val
450 455 460

Leu Asp Asn Phe Phe Arg Ser His Ile Ser Thr Asp Ala His Ser Leu
465 470 475 480

Asn Ser Ala Ala Gln
485

<210> 21

<211> 461

<212> PRT

<213> Schizosaccharomyces pombe

<400> 21

Met Ser Asp Ser Asn His Phe Leu Asp Leu His Ser Tyr Thr Gln Leu
1 5 10 15

Glu Val Glu Arg Phe Arg Glu Ser Leu Ile Gln Phe Tyr Asp Lys Thr
20 25 30

Lys Arg Ile Leu Pro Trp Arg Lys Lys Glu Cys Ile Pro Pro Ser Glu
35 40 45

Asp Ser Pro Leu Glu Asp Trp Glu Gln Pro Val Gln Arg Leu Tyr Glu
50 55 60

Val Leu Val Ser Glu Ile Met Leu Gln Gln Thr Arg Val Glu Thr Val
65 70 75 80

Lys Arg Tyr Tyr Thr Lys Trp Met Glu Thr Leu Pro Thr Leu Lys Ser
85 90 95

Cys Ala Glu Ala Glu Tyr Asn Thr Gln Val Met Pro Leu Trp Ser Gly
100 105 110

Met Gly Phe Tyr Thr Arg Cys Lys Arg Leu His Gln Ala Cys Gln His
 115 120 125
 Leu Ala Lys Leu His Pro Ser Glu Ile Pro Arg Thr Gly Asp Glu Trp
 130 135 140
 Ala Lys Gly Ile Pro Gly Val Gly Pro Tyr Thr Ala Gly Ala Val Leu
 145 150 155 160
 Ser Ile Ala Trp Lys Gln Pro Thr Gly Ile Val Asp Gly Asn Val Ile
 165 170 175
 Arg Val Leu Ser Arg Ala Leu Ala Ile His Ser Asp Cys Ser Lys Gly
 180 185 190
 Lys Ala Asn Ala Leu Ile Trp Lys Leu Ala Asn Glu Leu Val Asp Pro
 195 200 205
 Val Arg Pro Gly Asp Glu Asn Gln Ala Leu Met Glu Leu Gly Ala Ile
 210 215 220
 Thr Cys Thr Pro Gln Ser Pro Arg Cys Ser Val Cys Pro Ile Ser Glu
 225 230 235 240
 Ile Cys Lys Ala Tyr Gln Glu Gln Asn Val Ile Arg Asp Gly Asn Thr
 245 250 255
 Ile Lys Tyr Asp Ile Glu Asp Val Pro Cys Asn Ile Cys Ile Thr Asp
 260 265 270
 Ile Pro Ser Lys Glu Asp Leu Gln Asn Trp Val Val Ala Arg Tyr Pro
 275 280 285
 Val His Pro Ala Lys Thr Lys Gln Arg Glu Glu Arg Ala Leu Val Val
 290 295 300
 Ile Phe Gln Lys Thr Asp Pro Ser Thr Lys Glu Lys Phe Phe Leu Ile
 305 310 315 320
 Arg Lys Arg Pro Ser Ala Gly Leu Leu Ala Gly Leu Trp Asp Phe Pro
 325 330 335
 Thr Ile Glu Phe Gly Gln Glu Ser Trp Pro Lys Asp Met Asp Ala Glu
 340 345 350
 Phe Gln Lys Ser Ile Ala Gln Trp Ile Ser Asn Asp Ser Arg Ser Leu
 355 360 365

Ile Lys Lys Tyr Gln Ser Arg Gly Arg Tyr Leu His Ile Phe Ser His
 370 375 380

Ile Arg Lys Thr Ser His Val Phe Tyr Ala Ile Ala Ser Pro Asp Ile
 385 390 395 400

Val Thr Asn Glu Asp Phe Phe Trp Ile Ser Gln Ser Asp Leu Glu His
 405 410 415

Val Gly Met Cys Glu Leu Gly Leu Lys Asn Tyr Arg Ala Ala Leu Glu
 420 425 430

Ile Lys Lys Arg Lys Val Thr Ser Leu Ser Asn Phe Lys Glu Pro Lys
 435 440 445

Leu Thr Ser Ala Arg Arg Ile Val Thr Lys Ala Glu Cys
 450 455 460

<210> 22

<211> 350

<212> PRT

<213> Escherichia coli

<400> 22

Met Gln Ala Ser Gln Phe Ser Ala Gln Val Leu Asp Trp Tyr Asp Lys
 1 5 10 15

Tyr Gly Arg Lys Thr Leu Pro Trp Gln Ile Asp Lys Thr Pro Tyr Lys
 20 25 30

Val Trp Leu Ser Glu Val Met Leu Gln Gln Thr Gln Val Ala Thr Val
 35 40 45

Ile Pro Tyr Phe Glu Arg Phe Met Ala Arg Phe Pro Thr Val Thr Asp
 50 55 60

Leu Ala Asn Ala Pro Leu Asp Glu Val Leu His Leu Trp Thr Gly Leu
 65 70 75 80

Gly Tyr Tyr Ala Arg Ala Arg Asn Leu His Lys Ala Ala Gln Gln Val
 85 90 95

Ala Thr Leu His Gly Gly Lys Phe Pro Glu Thr Phe Glu Glu Val Ala
 100 105 110

Ala Leu Pro Gly Val Gly Arg Ser Thr Ala Gly Ala Ile Leu Ser Leu
 115 120 125

Ser Leu Gly Lys His Phe Pro Ile Leu Asp Gly Asn Val Lys Arg Val
 130 135 140

Leu Ala Arg Cys Tyr Ala Val Ser Gly Trp Pro Gly Lys Lys Glu Val
 145 150 155 160

Glu Asn Lys Leu Trp Ser Leu Ser Glu Gln Val Thr Pro Ala Val Gly
 165 170 175

Val Glu Arg Phe Asn Gln Ala Met Met Asp Leu Gly Ala Met Ile Cys
 180 185 190

Thr Arg Ser Lys Pro Lys Cys Ser Leu Cys Pro Leu Gln Asn Gly Cys
 195 200 205

Ile Ala Ala Ala Asn Asn Ser Trp Ala Leu Tyr Pro Gly Lys Lys Pro
 210 215 220

Lys Gln Thr Leu Pro Glu Arg Thr Gly Tyr Phe Leu Leu Leu Gln His
 225 230 235 240

Glu Asp Glu Val Leu Leu Ala Gln Arg Pro Pro Ser Gly Leu Trp Gly
 245 250 255

Gly Leu Tyr Cys Phe Pro Gln Phe Ala Asp Glu Glu Ser Leu Arg Gln
 260 265 270

Trp Leu Ala Gln Arg Gln Ile Ala Ala Asp Asn Leu Thr Gln Leu Thr
 275 280 285

Ala Phe Arg His Thr Phe Ser His Phe His Leu Asp Ile Val Pro Met
 290 295 300

Trp Leu Pro Val Ser Ser Phe Thr Gly Cys Met Asp Glu Gly Asn Ala
 305 310 315 320

Leu Trp Tyr Asn Leu Ala Gln Pro Pro Ser Val Gly Leu Ala Ala Pro
 325 330 335

Val Glu Arg Leu Leu Gln Gln Leu Arg Thr Gly Ala Pro Val
 340 345 350

<210> 23

<211> 211

<212> PRT

<213> Escherichia coli

<400> 23

Met Asn Lys Ala Lys Arg Leu Glu Ile Leu Thr Arg Leu Arg Glu Asn
 1 5 10 15

Asn Pro His Pro Thr Thr Glu Leu Asn Phe Ser Ser Pro Phe Glu Leu
 20 25 30

Leu Ile Ala Val Leu Leu Ser Ala Gln Ala Thr Asp Val Ser Val Asn
 35 40 45

Lys Ala Thr Ala Lys Leu Tyr Pro Val Ala Asn Thr Pro Ala Ala Met
 50 55 60

Leu Glu Leu Gly Val Glu Gly Val Lys Thr Tyr Ile Lys Thr Ile Gly
 65 70 75 80

Leu Tyr Asn Ser Lys Ala Glu Asn Ile Ile Lys Thr Cys Arg Ile Leu
 85 90 95

Leu Glu Gln His Asn Gly Glu Val Pro Glu Asp Arg Ala Ala Leu Glu
 100 105 110

Ala Leu Pro Gly Val Gly Arg Lys Thr Ala Asn Val Val Leu Asn Thr
 115 120 125

Ala Phe Gly Trp Pro Thr Ile Ala Val Asp Thr His Ile Phe Arg Val
 130 135 140

Cys Asn Arg Thr Gln Phe Ala Pro Gly Lys Asn Val Glu Gln Val Glu
 145 150 155 160

Glu Lys Leu Leu Lys Val Val Pro Ala Glu Phe Lys Val Asp Cys His
 165 170 175

His Trp Leu Ile Leu His Gly Arg Tyr Thr Cys Ile Ala Arg Lys Pro
 180 185 190

Arg Cys Gly Ser Cys Ile Ile Glu Asp Leu Cys Glu Tyr Lys Glu Lys
 195 200 205

Val Asp Ile
 210

<210> 24

<211> 28

<212> PRT

<213> Thermus thermophilus

<400> 24

Lys Arg Ile Arg Val His Gly Asp Tyr Asp Ala Asp Gly Leu Thr Gly
 1 5 10 15

Thr Ala Ile Leu Val Arg Gly Leu Ala Ala Leu Gly
 20 25

<210> 25

<211> 28

<212> PRT

<213> escherichia coli

<400> 25

Thr Arg Ile Ile Val Val Gly Asp Phe Asp Ala Asp Gly Ala Thr Ser
 1 5 10 15

Thr Ala Leu Ser Val Leu Ala Met Arg Ser Leu Gly
 20 25

<210> 26

<211> 28

<212> PRT

<213> aquifex aeolicus

<400> 26

Lys Arg Ile Ile Ile Tyr Gly Asp Tyr Asp Val Asp Gly Ile Thr Gly
 1 5 10 15

Thr Ala Ile Leu Tyr Arg Val Leu Lys Leu Leu Gly
 20 25

<210> 27

<211> 28

<212> PRT

<213> helicobacter pylori

<400> 27

Thr Glu Ile Leu Val Val Gly Asp Tyr Asp Ala Asp Gly Val Ile Ser
 1 5 10 15

Ser Ala Ile Met Ala Lys Phe Phe Glu Ser Leu Asn
 20 25

<210> 28

<211> 28

<212> PRT

<213> Haemophilus influenzae

<400> 28

Gln Lys Ile Val Ile Val Gly Asp Phe Asp Ala Asp Gly Ala Thr Ser
 Page 30

1 5 10 15

Thr Ala Leu Ser Val Leu Ala Leu Arg Gln Leu Gly
20 25

<210> 29
<211> 28
<212> PRT
<213> *saccharomyces cerevisiae*

<400> 29

Thr Ile Cys Val Gly Asn Glu Ser Ala Asp Met Asp Ser Ile Ala Ser
1 5 10 15

Ala Ile Thr Tyr Ser Tyr Cys Gln Tyr Ile Tyr Asn
20 25

<210> 30
<211> 28
<212> PRT
<213> *drosophila melanogaster*

<400> 30

His Leu Val Met Gly Asn Glu Ser Cys Asp Leu Asp Ser Ala Val Ser
1 5 10 15

Ala Val Thr Leu Ala Phe Val Tyr Ala Ala Ser Ser
20 25

<210> 31
<211> 19
<212> PRT
<213> *thermus thermophilus*

<400> 31

Ser Asp Leu Phe Leu Thr Val Asp Cys Gly Ile Thr Asn His Ala Glu
1 5 10 15

Leu Arg Glu

<210> 32
<211> 19
<212> PRT
<213> *escherichia coli*

<400> 32

Ala Gln Leu Ile Val Thr Val Asp Asn Gly Ile Ser Ser His Ala Gly
1 5 10 15

Val Glu His

<210> 33
 <211> 19
 <212> PRT
 <213> aquifex aeolicus

<400> 33

Gly Asp Phe Leu Ile Thr Val Asp Asn Gly Thr Ser Ala Val Glu Glu
 1 5 10 15

Ile Asp Gln

<210> 34
 <211> 19
 <212> PRT
 <213> helicobacter pylori

<400> 34

Ala Pro Leu Ile Ile Thr Val Asp Asn Gly Ile Asn Ala Phe Glu Ala
 1 5 10 15

Ala Arg Phe

<210> 35
 <211> 19
 <212> PRT
 <213> haemophilus influenzae

<400> 35

Val Gln Leu Leu Met Thr Val Asp Asn Gly Val Ser Ser Phe Asp Gly
 1 5 10 15

Val Ala Phe

<210> 36
 <211> 19
 <212> PRT
 <213> saccharomyces cerevisiae

<400> 36

Glu Leu Asn Ser Tyr Leu Val Asp Asn Asn Asp Thr Pro Lys Asn Leu
 1 5 10 15

Lys Asn Tyr

<210> 37
 <211> 19
 <212> PRT
 <213> drosophila melanogaster

<400> 37

Pro Leu Val Cys Glu Met Trp Asp Cys Arg Ala Arg Val Ala Leu Pro
 1 5 10 15

Arg Arg Tyr

<210> 38
 <211> 13
 <212> PRT
 <213> thermus thermophilus

<400> 38

Val Glu Val Ile Val Thr Asp His His Thr Pro Gly Lys
 1 5 10

<210> 39
 <211> 13
 <212> PRT
 <213> escherichia coli

<400> 39

Ile Pro Val Ile Val Thr Asp His His Leu Pro Gly Asp
 1 5 10

<210> 40
 <211> 13
 <212> PRT
 <213> aquifex aeolicus

<400> 40

Leu Glu Thr Val Val Ile Asp His His Asn Val Pro Pro
 1 5 10

<210> 41
 <211> 13
 <212> PRT
 <213> helicobacter pylori

<400> 41

Tyr Thr Leu Ile Ile Thr Asp His His Cys Leu His His
 1 5 10

<210> 42
 <211> 13
 <212> PRT

<213> haemophilus influenzae

<400> 42

Ile Arg Val Leu Val Thr Asp His His Leu Pro Pro Glu
1 5 10

<210> 43

<211> 13

<212> PRT

<213> saccharomyces cerevisiae

<400> 43

Asn Val Val Gly Ile Ile Asp His His Phe Asp Leu Gln
1 5 10

<210> 44

<211> 13

<212> PRT

<213> drosophila melanogaster

<400> 44

Asn Val Ile Glu Ile Leu Asp His Arg Pro Leu Glu Asp
1 5 10

<210> 45

<211> 19

<212> PRT

<213> thermus thermophilus

<400> 45

Tyr Ala Asp Leu Ala Ala Val Gly Thr Ile Ala Asp Val Ala Pro Leu
1 5 10 15

Trp Gly Trp

<210> 46

<211> 19

<212> PRT

<213> escherichia coli

<400> 46

Leu Leu Asp Leu Val Ala Leu Gly Thr Val Ala Asp Val Val Pro Leu
1 5 10 15

Asp Ala Asn

<210> 47

<211> 19

<212> PRT

<213> aquifex aeolicus

<400> 47

Phe Leu Asp Leu Val Ala Leu Gly Leu Leu Ala Asp Tyr Met Pro Val
 1 5 10 15

Asn Pro Val

<210> 48

<211> 19

<212> PRT

<213> helicobacter pylori

<400> 48

Leu Leu Cys Leu Ala Gly Val Ala Thr Ile Ala Asp Met Met Pro Leu
 1 5 10 15

Thr Phe Phe

<210> 49

<211> 19

<212> PRT

<213> haemophilus influenzae

<400> 49

Leu Leu Asp Leu Val Ala Leu Gly Thr Ile Ala Asp Val Val Pro Leu
 1 5 10 15

Asp Gln Asn

<210> 50

<211> 19

<212> PRT

<213> saccharomyces cerevisiae

<400> 50

Ile Ala Leu Leu Leu Met Gly Ala Ile Leu Ile Asp Thr Ser Asn Met
 1 5 10 15

Arg Arg Lys

<210> 51

<211> 19

<212> PRT

<213> drosophila melanogaster

<400> 51

Val Ala Gln Leu Leu His Ala Thr Ile Val Leu Asp Thr Ile Asn Phe
1 5 10 15

Ala Pro Ala

<210> 52
<211> 17
<212> PRT
<213> thermus thermophilus

<400> 52

Asp Leu Leu Leu Arg Tyr Gly Gly His Lys Glu Ala Ala Gly Phe Ala
1 5 10 15

Met

<210> 53
<211> 17
<212> PRT
<213> escherichia coli

<400> 53

Gly Met Met Leu Lys Phe Gly Gly His Ala Met Ala Ala Gly Leu Ser
1 5 10 15

Leu

<210> 54
<211> 17
<212> PRT
<213> aquifex aeolicus

<400> 54

Asp Met Phe Leu Lys Trp Gly Gly His Asp Lys Ala Met Gly Leu Thr
1 5 10 15

Leu

<210> 55
<211> 17
<212> PRT
<213> helicobacter pylori

<400> 55

Ser Leu Leu Leu Gly Tyr Gly Gly His Arg Gln Ala Cys Gly Leu Ser
1 5 10 15

Val

<210> 56
 <211> 17
 <212> PRT
 <213> haemophilus influenzae

<400> 56

Asn Met Ile Leu Lys Phe Gly Gly His Ala Met Ala Ala Gly Leu Ser
 1 5 10 15

Ile

<210> 57
 <211> 49
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic DNA

<400> 57
 actacttggt acactgacgc gagcacgcag gagctcattc cagtgcgca

49

<210> 58
 <211> 343
 <212> PRT
 <213> Thermus thermophilus

<400> 58

Met Arg Leu Leu Leu Phe Arg Gln Arg Asn Phe Arg Asn Leu Ala Leu
 1 5 10 15

Glu Ala Tyr Arg Pro Pro Pro Gly Leu Ser Ala Leu Val Gly Ala Asn
 20 25 30

Ala Gln Gly Lys Thr Ser Leu Leu Leu Gly Ile His Leu Ala Leu Gly
 35 40 45

Gly Glu Val Pro Leu Gly Leu Ala Asp Leu Val Arg Phe Gly Glu Glu
 50 55 60

Glu Ala Trp Leu His Ala Glu Val Glu Thr Glu Leu Gly Ala Tyr Arg
 65 70 75 80

Leu Glu His Arg Leu Gly Pro Gly Gly Arg Glu Val Leu Leu Asn Gly
 85 90 95

11283-013001.ST25.txt

Lys Arg Val Ser Leu Arg Thr Leu Trp Glu Leu Pro Gly Ser Val Leu
 100 105 110
 Val Ser Pro Leu Asp Leu Glu Ala Val Leu Gly Pro Lys Glu Glu Arg
 115 120 125
 Arg Ala Tyr Leu Asp Arg Leu Ile Ala His Phe Ser Arg Arg Tyr Ala
 130 135 140
 Ala Leu Leu Ser Ala Tyr Glu Lys Ala Leu Arg Gln Arg Asn Ala Leu
 145 150 155 160
 Leu Lys Ala Gly Gly Glu Gly Leu Ser Ala Trp Asp Arg Glu Leu Ala
 165 170 175
 Arg Tyr Gly Asp Glu Ile Val Ala Leu Arg Arg Arg Phe Leu Arg Arg
 180 185 190
 Phe Ala Pro Ile Leu Arg Glu Val His Ala Ala Leu Ala Ala Lys Glu
 195 200 205
 Ala Gly Leu Arg Leu Glu Glu Thr Ala Gly Glu Gly Val Leu Arg Ala
 210 215 220
 Leu Glu Ala Ser Arg Ala Glu Glu Arg Glu Arg Gly Gln Thr Leu Val
 225 230 235 240
 Gly Pro His Arg Asp Asp Leu Val Phe Leu Leu Glu Gly Arg Pro Ala
 245 250 255
 His Arg Phe Ala Ser Arg Gly Glu Ala Lys Thr Leu Ala Leu Ala Leu
 260 265 270
 Arg Leu Ala Glu His Arg Leu Leu Gly Glu His His Gly Glu Pro Pro
 275 280 285
 Leu Leu Leu Val Asp Glu Trp Gly Glu Glu Leu Asp Glu Ala Arg Arg
 290 295 300
 Arg Ala Val Leu Ala Tyr Ala Gln Ala Leu Pro Gln Ala Ile Leu Ala
 305 310 315 320
 Gly Leu Glu Ala Pro Pro Gly Val Pro Val Cys Ser Val Val Arg Gly
 325 330 335
 Val Val Leu Cys Pro Gly Ala
 340

<210> 59
 <211> 357
 <212> PRT
 <213> Escherichia coli

<400> 59

Met Ser Leu Thr Arg Leu Leu Ile Arg Asp Phe Arg Asn Ile Glu Thr
 1 5 10 15

Ala Asp Leu Ala Leu Ser Pro Gly Phe Asn Phe Leu Val Gly Ala Asn
 20 25 30

Gly Ser Gly Lys Thr Ser Val Leu Glu Ala Ile Tyr Thr Leu Gly His
 35 40 45

Gly Arg Ala Phe Arg Ser Leu Gln Ile Gly Arg Val Ile Arg His Glu
 50 55 60

Gln Glu Ala Phe Val Leu His Gly Arg Leu Gln Gly Glu Glu Arg Glu
 65 70 75 80

Thr Ala Ile Gly Leu Thr Lys Asp Lys Gln Gly Asp Ser Lys Val Arg
 85 90 95

Ile Asp Gly Thr Asp Gly His Lys Val Ala Glu Leu Ala His Leu Met
 100 105 110

Pro Met Gln Leu Ile Thr Pro Glu Gly Phe Thr Leu Leu Asn Gly Gly
 115 120 125

Pro Lys Tyr Arg Arg Ala Phe Leu Asp Trp Gly Cys Phe His Asn Glu
 130 135 140

Pro Gly Phe Phe Thr Ala Trp Ser Asn Leu Lys Arg Leu Leu Lys Gln
 145 150 155 160

Arg Asn Ala Ala Leu Arg Gln Val Thr Arg Tyr Glu Gln Leu Arg Pro
 165 170 175

Trp Asp Lys Glu Leu Ile Pro Leu Ala Glu Gln Ile Ser Thr Trp Arg
 180 185 190

Ala Glu Tyr Ser Ala Gly Ile Ala Ala Asp Met Ala Asp Thr Cys Lys
 195 200 205

Gln Phe Leu Pro Glu Phe Ser Leu Thr Phe Ser Phe Gln Arg Gly Trp
 210 215 220

Glu Lys Glu Thr Glu Tyr Ala Glu Val Leu Glu Arg Asn Phe Glu Arg
 225 230 235 240

Asp Arg Gln Leu Thr Tyr Thr Ala His Gly Pro His Lys Ala Asp Leu
 245 250 255

Arg Ile Arg Ala Asp Gly Ala Pro Val Glu Asp Thr Leu Ser Arg Gly
 260 265 270

Gln Leu Lys Leu Leu Met Cys Ala Leu Arg Leu Ala Gln Gly Glu Phe
 275 280 285

Leu Thr Arg Glu Ser Gly Arg Arg Cys Leu Tyr Leu Ile Asp Asp Phe
 290 295 300

Ala Ser Glu Leu Asp Asp Glu Arg Arg Gly Leu Leu Ala Ser Arg Leu
 305 310 315 320

Lys Ala Thr Gln Ser Gln Val Phe Val Ser Ala Ile Ser Ala Glu His
 325 330 335

Val Ile Asp Met Ser Asp Glu Asn Ser Lys Met Phe Thr Val Glu Lys
 340 345 350

Gly Lys Ile Thr Asp
 355

<210> 60
 <211> 233
 <212> PRT
 <213> Pseudomonas putida

<400> 60

Met Ser Leu Arg Arg Ile Met Val Thr Ala Val Arg Asn Leu His Pro
 1 5 10 15

Val Thr Leu Leu Pro Ser Pro Arg Ile Asn Ile Leu Tyr Gly Ala Asn
 20 25 30

Gly Ser Gly Lys Thr Ser Val Leu Glu Ala Val His Leu Leu Gly Leu
 35 40 45

Ala Arg Ser Phe Arg Ser Thr Arg Leu Asn Pro Val Ile Gln Tyr Glu
 50 55 60

Gln Ala Ala Cys Thr Val Phe Gly Glu Val Gln Leu Thr Glu Gly Gly
 65 70 75 80

Thr Ser Asn Leu Gly Val Ser Arg Glu Arg Gln Gly Glu Phe Thr Ile
85 90 95

Arg Ile Asp Ala Leu Lys Pro Val Phe Glu Arg Thr Leu Ser Glu Leu
100 105 110

Val Glu Leu Asp Gly Leu Thr Leu Ser Tyr Tyr Arg Gly Trp Asp Lys
115 120 125

Asp Arg Glu Leu Gln Glu Val Leu Ala Ser Ser Leu Leu Arg Asp Gln
130 135 140

Gln Met Gly His Thr Gln Ala Gly Pro Gln Arg Ala Asp Leu Arg Leu
145 150 155 160

Arg Leu Ala Gly Asn Asn Ala Ala Asp Ile Leu Ser Arg Gly Gln Gln
165 170 175

Lys Leu Val Val Cys Ala Leu Arg Ile Ala Gln Gly His Leu Val Ser
180 185 190

Gln Ala Arg Arg Gly His Cys Ile Tyr Leu Val Asp Asp Leu Pro Ser
195 200 205

Glu Leu Asp Asp Gln His Arg Arg Ala Leu Cys Arg Leu Leu Glu Glu
210 215 220

Leu Arg Cys Gln Cys Ser Ser Pro Val
225 230

<210> 61
<211> 370
<212> PRT
<213> Bacillus subtilis

<400> 61

Met Tyr Ile Gln Asn Leu Glu Leu Thr Ser Tyr Arg Asn Tyr Asp His
1 5 10 15

Ala Glu Leu Gln Phe Glu Asn Lys Val Asn Val Ile Ile Gly Glu Asn
20 25 30

Ala Gln Gly Lys Thr Asn Leu Met Glu Ala Ile Tyr Val Leu Ser Met
35 40 45

Ala Lys Ser His Arg Thr Ser Asn Asp Lys Glu Leu Ile Arg Trp Asp
50 55 60

Lys Asp Tyr Ala Lys Ile Glu Gly Arg Val Met Lys Gln Asn Gly Ala
65 70 75 80

Ile Pro Met Gln Leu Val Ile Ser Lys Lys Gly Lys Lys Gly Lys Val
85 90 95

Asn His Ile Glu Gln Gln Lys Leu Ser Gln Tyr Val Gly Ala Leu Asn
100 105 110

Thr Ile Met Phe Ala Pro Glu Asp Leu Asn Leu Val Lys Gly Ser Pro
115 120 125

Gln Val Arg Arg Arg Phe Leu Asp Met Glu Ile Gly Gln Val Ser Pro
130 135 140

Val Tyr Leu His Asp Leu Ser Leu Tyr Gln Lys Ile Leu Ser Gln Arg
145 150 155 160

Asn His Phe Leu Lys Gln Leu Gln Thr Arg Lys Gln Thr Asp Arg Thr
165 170 175

Met Leu Asp Val Leu Thr Asp Gln Leu Val Glu Val Ala Ala Lys Val
180 185 190

Val Val Lys Arg Leu Gln Phe Thr Ala Gln Leu Glu Lys Trp Ala Gln
195 200 205

Pro Ile His Ala Gly Ile Ser Arg Gly Leu Glu Glu Leu Thr Leu Lys
210 215 220

Tyr His Thr Ala Leu Asp Val Ser Asp Pro Leu Asp Leu Ser Lys Ile
225 230 235 240

Gly Asp Ser Tyr Gln Glu Ala Phe Ser Lys Leu Arg Glu Lys Glu Ile
245 250 255

Glu Arg Gly Val Thr Leu Ser Gly Pro His Arg Asp Asp Val Leu Phe
260 265 270

Tyr Val Asn Gly Arg Asp Val Gln Thr Tyr Gly Ser Gln Gly Gln Gln
275 280 285

Arg Thr Thr Ala Leu Ser Leu Lys Leu Ala Glu Ile Asp Leu Ile His
290 295 300

Glu Glu Ile Gly Glu Tyr Pro Ile Leu Leu Leu Asp Asp Val Leu Ser
Page 42

305 310 320

Glu Leu Asp Asp Tyr Arg Gln Ser His Leu Leu His Thr Ile Gln Gly
325 330 335

Arg Val Gln Thr Phe Val Thr Thr Thr Ser Val Asp Gly Ile Asp His
340 345 350

Glu Thr Leu Arg Gln Ala Gly Met Phe Arg Val Gln Asn Gly Ala Leu
355 360 365

Val Lys
370

<210> 62
<211> 385
<212> PRT
<213> Mycobacterium tuberculosis
<400> 62

Met Tyr Val Arg His Leu Gly Leu Arg Asp Phe Arg Ser Trp Ala Cys
1 5 10 15

Val Asp Leu Glu Leu His Pro Gly Arg Thr Val Phe Val Gly Pro Asn
20 25 30

Gly Tyr Gly Lys Thr Asn Leu Ile Glu Ala Leu Trp Tyr Ser Thr Thr
35 40 45

Leu Gly Ser His Arg Val Ser Ala Asp Leu Pro Leu Ile Arg Val Gly
50 55 60

Thr Asp Arg Ala Val Ile Ser Thr Ile Val Val Asn Asp Gly Arg Glu
65 70 75 80

Cys Ala Val Asp Leu Glu Ile Ala Thr Gly Arg Val Asn Lys Ala Arg
85 90 95

Leu Asn Arg Ser Ser Val Arg Ser Thr Arg Asp Val Val Gly Val Leu
100 105 110

Arg Ala Val Leu Phe Ala Pro Glu Asp Leu Gly Leu Val Arg Gly Asp
115 120 125

Pro Ala Asp Arg Arg Arg Tyr Leu Asp Asp Leu Ala Ile Val Arg Arg
130 135 140

Pro Ala Ile Ala Ala Val Arg Ala Glu Tyr Glu Arg Val Leu Arg Gln
Page 43

11283-013001.ST25.txt

[illegible]

<210> 63

<211> 359

<212> PRT

<213> Deinococcus radiodurans

<400> 63

Met Gly Asp Val Arg Leu Ser Ala Leu Ser Thr Leu Asn Tyr Arg Asn
 1 5 10 15

Leu Ala Pro Gly Thr Leu Asn Phe Pro Glu Gly Val Thr Gly Ile Tyr
 20 25 30

Gly Glu Asn Gly Ala Gly Lys Thr Asn Leu Leu Glu Ala Ala Tyr Leu
 35 40 45

Ala Leu Thr Gly Gln Thr Asp Ala Pro Arg Ile Glu Gln Leu Ile Gln
 50 55 60

Ala Gly Glu Thr Glu Ala Tyr Val Arg Ala Asp Leu Gln Gln Gly Gly
 65 70 75 80

Ser Leu Ser Ile Gln Glu Val Gly Leu Gly Arg Gly Arg Arg Gln Leu
 85 90 95

Lys Val Asp Gly Val Arg Ala Arg Thr Gly Asp Leu Pro Arg Gly Gly
 100 105 110

Ala Val Trp Ile Arg Pro Glu Asp Ser Glu Leu Val Phe Gly Pro Pro
 115 120 125

Ser Gly Arg Arg Ala Tyr Leu Asp Ser Leu Leu Ser Arg Leu Ser Ala
 130 135 140

Arg Tyr Gly Glu Gln Leu Ser Arg Tyr Glu Arg Thr Val Ser Gln Arg
 145 150 155 160

Asn Ala Ala Leu Arg Gly Gly Glu Glu Trp Ala Met His Val Trp Asp
 165 170 175

Asp Val Leu Leu Lys Leu Gly Thr Glu Ile Met Leu Phe Arg Arg Arg
 180 185 190

Ala Leu Thr Arg Leu Asp Glu Leu Ala Arg Glu Ala Asn Ala Gln Leu
 195 200 205

Gly Ser Arg Lys Thr Leu Ala Leu Thr Leu Thr Glu Ser Thr Ser Pro
 210 215 220

Glu Thr Tyr Ala Ala Asp Leu Arg Gly Arg Arg Ala Glu Glu Leu Ala
 225 230 235 240

Arg Gly Ser Thr Val Thr Gly Pro His Arg Asp Asp Leu Leu Leu Thr
 245 250 255

Leu Gly Asp Phe Pro Ala Ser Asp Tyr Ala Ser Arg Gly Glu Gly Arg
 260 265 270

Thr Val Ala Leu Ala Leu Arg Arg Ala Glu Leu Glu Leu Leu Arg Glu
 275 280 285

Lys Phe Gly Glu Asp Pro Val Leu Leu Leu Asp Asp Phe Thr Ala Glu
 290 295 300

Leu Asp Pro His Arg Arg Gln Tyr Leu Leu Asp Leu Ala Ala Ser Val
 305 310 315 320

Pro Gln Ala Ile Val Thr Gly Thr Glu Leu Ala Pro Gly Ala Ala Leu
 325 330 335

Thr Leu Arg Ala Gln Ala Gly Arg Phe Thr Pro Val Ala Asp Glu Glu
 340 345 350

Met Gln Ala Glu Gly Thr Ala
 355

<210> 64

<211> 89

<212> PRT

<213> Artificial sequence

<220>

<223> UvrB-beta artificial fragment

<400> 64

Arg Asn Leu Val Val Glu Arg Gly Lys Pro Tyr Pro Arg Glu Val Leu
 1 5 10 15

Leu Glu Arg Leu Leu Glu Leu Gly Tyr Gln Arg Asn Asp Ile Asp Leu
 20 25 30

Ser Pro Gly Arg Phe Arg Ala Lys Gly Glu Val Leu Glu Ile Phe Pro
 35 40 45

Ala Tyr Glu Thr Glu Pro Ile Arg Val Glu Leu Phe Gly Asp Glu Val
 50 55 60

Glu Arg Ile Ser Gln Val His Pro Val Thr Gly Glu Arg Leu Arg Glu
 Page 46

65

70

75

80

Leu Pro Gly Phe Val Leu Phe Pro Ala
85

<210> 65

<211> 87

<212> PRT

<213> Artificial sequence

<220>

<223> TRCF-beta artificial fragment

<400> 65

Trp Arg Leu Leu Leu Glu Val Gly Arg Ala Tyr Pro Arg Glu Ala Leu
1 5 10 15

Leu Ser Arg Leu Leu Lys Leu Gly Tyr Ala Arg Asp Glu Asp Tyr Arg
20 25 30

Val Leu Gly Glu Val Val Glu Leu Gly Glu Val Arg Leu Glu Phe Phe
35 40 45

Gly Asp Glu Leu Glu Arg Leu Val Val Arg Gly Glu Glu Arg Arg Arg
50 55 60

His Val Leu Leu Pro Lys Pro Gly Lys Ala Glu Gly Phe Thr Ser Lys
65 70 75 80

Lys Val Leu His Glu Pro Gly
85